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Peach Diseases in Ontario*

Prof. L. Caesar, O. A. C., Guelph, Ont.

EVERY peach grower is familiar with the leaf curl disease, and knows that it attacks the leaves early in the spring and causes the mat first to become thickened, curled and distorted and of a pale whitish or often reddish color, and later on to become brown and dead and fall off. It is, next to Yellows and Little Peach, the most destructive disease that growers have to combat. The loss takes the following forms: First, In seasons of severe attack many young nursery trees are killed the first year they are set out and before they have had a chance to get over the shock of transplanting; second, there is a great drain on the vitality of older trees from the loss often of a large part of their foliage early in the season and the necessity of producing a new crop of leaves. Such trees are frequently not properly matured for winter and are sometimes killed by the cold. Trees severely attacked two or three years in succession not infrequently die, or at least lose a number of their branches; third, the fruit is dwarfed and often in bad cases drops off. This is to be expected from the fact that the substances that make the fruit are largely manufactured in the leaves; hence this source of supply is cut off for a considerable period by the disease; fourth, the disease often attacks young shoots or twigs and kills these.

*Extract from a paper read at the recent annual convention of the Ontario Fruit Growers' Association, held in Toronto.

FAVORABLE CONDITIONS

Leaf Curl is well known not to be so severe some years as others. Experience has shown that it is favored by damp late springs, while it is almsot completely kept in check by dry sunny weather around the time of blooming, and while the leaves are still quite small. In 1910 the spring was very late, cold and wet, and so the disease was exceptionally severe. Last year, 1911, the spring was early and we had beautiful, hot, sunny, dry weather, with the result that there was no Leaf Curl or almost none. This fact has led some to believe that Leaf Curl is not a disease, but is merely the result of unfavorable weather conditions. Such. however, is not the case, as anyone can easily prove who takes a glance through a microscope at one of the dead leaves from an affected tree and sees the millions of spores on the surface. These spores act like seeds and are carried by the wind from tree to tree and orchard to orchard, but so far as we know do not germinate until the next year. For their germination and growth plenty of moisture is necessary, hence the wet seasons favor their growth; moreover, cold does not interfere with their development, while it retards the vigor of the leaves.

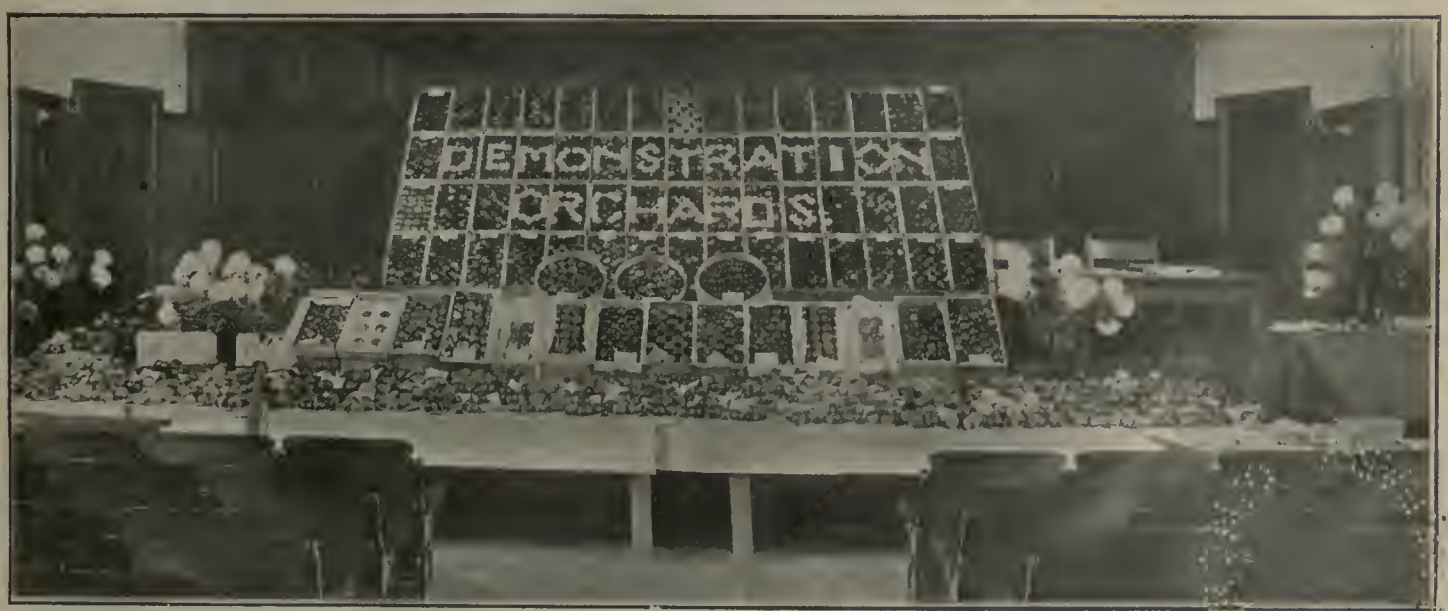
A number of years ago we were told that spraying would not control the disease because it was then believed that it passed the winter only in diseased twigs, but we now know from thousands of experimenters that even in the most favorable seasons for the disease we can keep it under thorough control by a single application.

MEANS OF CONTROL

Spray with lime-sulphur of the ordinary strength as for San Jose Scale (one gallon commercial wash diluted to about ten with water). This application must be made early in the spring and before the buds have begun to swell. The disease begins with the growing bud, so to prevent its getting a start we must spray early before the spores around the buds can germinate. Most of the failures to control the Leaf Curl are due to spraying too late and not taking sufficient pains to see that every bud is thoroughly covered. Bordeaux would also control the disease, but is not recommended because in most peach districts San Jose Scale is either present or likely to be introduced and the lime-sulphur will keep it in check, while Bordeaux will not.

MILDEW

The Powdery Mildew (Sphaerotheca pannosa, Wallr.) disease is found chiefly on young trees not yet in bearing, but



Some of the High Grade Fruit Grown in the Province of Quebec as shown at recent Annual Convention of the Provincial Fruit Growers' Association, held at Macdonald College

occasionally it occurs on older trees. It attacks the leaves chiefly, especially those on the terminal twigs, and causes these to become somewhat folded, dwarfed, distorted, and sickly. The succulent twigs on which the affected leaves are borne are also attacked. The disease is easily recognized by the white powdery substance found in abundance on the affected leaves and shoots. This substance consists of countless masses of tiny spores.

This mildew is favored by warm, moist conditions and is worst in late summer and autumn. It seldom does much harm, though young trees severely attacked are weakened greatly and stunted and are liable to be winter killed. This is the same disease as attacks the rose bushes, on which, in fact, it is much more common and destructive than on the peach.

Spraying with the self-boiled lime-sulphur should be an excellent remedy. The spraying should be done as soon as the disease is noticed and repeated about every ten or twelve days. Dusting sulphur over the trees will also control it as has frequently been proven in the case of rose bushes.

PEACH SCAB

Peach Scab or Black Spot (Gladosporium, Thum) is a disease that causes small blackish spots here and there over the surface of the fruit. Sometimes these are very abundant and disfigure the fruit greatly; occasionally a fruit is so badly attacked that it cracks open in the same way as a Flemish pear does when attacked by Pear Scab. As a rule this is not a very destructive disease in Ontario.

Spraying with the self-boiled lime-sulphur about a month after the fruit is set will usually control this disease quite satisfactorily, as shown by the experiments of Professor Scott, of Washington, D.C.

Best Varieties of Fruit to Plant

EACH year many beginners in fruit growing anxiously ask the question, what are the best varieties of fruit for me to grow? The question is not such a difficult one to answer as it was a few years ago. The numerous demonstration orchards, experimental farms, and agricultural colleges that are now located in almost all our provinces have each helped to provide accurate information on this point. This information is furnished free, often in bulletin form, to all who apply for it. In every province beginners will do well to consult their local provincial authorities in regard to varieties before giving extensive orders for nursery stock.

Varieties of fruit that do well in some provinces are utterly unsuited for growth in other provinces. Again, varieties that thrive in some parts of a province are not a success when grown in other parts of the same province. For this reason it is always advisable to consult not only experienced Government officials but also successful fruit growers in the section where planting is contemplated.

In each province there are certain varieties of fruit that have been proved to be especially adapted for the conditions there prevailing. In order to assist those readers of THE CANADIAN HORTICULTURIST who desire information on this subject we hereby publish lists of varieties of fruit best suited for growth in the provinces mentioned as given by some of the leading authorities in each province.

NOVA SCOTIA

From Nova Scotia, Prof. P. J. Shaw, of the Truro Agricultural College, writes as follows: The most profitable varieties of apples for the Annapolis Valley are now pretty well known to the growers. They include the Gravenstein, Ribston, Blenheim, King, Yellow Bellflower, Wagener, Cox Orange, Baldwin, R. I. Greening, Stark, Northern Spy, Golden Russet, Fallawater, Nonpariel, and Ben Davis.

Earlier varieties grown in small quantities are Astrachan, Y. Transparent, Duchess of Oldenburg, William's Favorite, and Wealthy. They are mostly sold

Educational Exhibit of New Brunswick Fruit
One of the exhibits of fruit as made at the recent provincial fruit show at St. John, N.B.

locally, and therefore do not find as large a market as most of those named in the first list, which are chiefly sold in Great Britain, Germany, the West Indies, and South Africa. There are also some Alexander, McIntosh Red, Wolf River, and Mann grown.

For that part of Nova Scotia from Truro east, including the island of Cape Breton, the varieties which seem to do the best are: Crimson Beauty, Yellow Transparent, Duchess of Oldenburg, Wealthy, Wolf River, Alexander, Dudley, McIntosh Red, and possibly Baxter and Milwaukee.

For conditions in New Brunswick, A. G. Turney, of Fredericton, the provincial horticulturist, has the following to say:

The wrong selection of varieties, not only in this province but in all places where fruit is grown, has occasioned enormous loss and great disappointment to fruit growers. The recommendations following represent the result of personal observations, together with the experience of our leading growers.

Apples not recommended at all include Ben Davis, Gano and Stark. Not to be planted on their own roots: Northern Spy, American Baldwin, Rhode Island Greening, King of Tompkins, Gravenstein, Bishop Pippin, Ribston Pippin, Blue Pearmain, Blenheim Pippin, Ontario and Wagener.

In the best sections of Albert, Charlotte, King's, Queen's, Sunbury, Westmorland, and York counties, the Bishop Pippin, Ribston Pippin, and Blue Pearmain can be grown very successfully by top-grafting to hardier stocks, such as Talman Sweet, Fameuse, and MacMahan's White.

South of a straight line drawn east and west from Woodstock to Shediac, the following varieties have proved hardy and valuable:

Summer—Crimson Beauty, Red Astrachan, Yellow Transparent.

Autumn—Duchess, New Brunswicker, Dudley.

Early Winter—Wealthy, Alexander, Wolfe River, Fameuse, McIntosh Red, Ribston Pippin (best top-grafted).

Winter—Bishop Pippin (top-grafted), Bethel, Canada Baldwin, Talman Sweet, Baxter, Peewaukee. These last two varieties are not recommended very strongly.

North of the same line the following varieties are recommended:

Summer—Crimson Beauty, Yellow Transparent.

Autumn—Duchess, New Brunswicker

Early and Midwinter—Wealthy, Wolfe River, Fameuse, Alexander.

Winter—Scott's Winter, Canada Baldwin.

For commercial apple growing, where the orchards will range larger, the Fameuse, McIntosh Red, Bethel, Bishop Pippin, and Talman Sweet will find a ready sale at good prices on the local markets. For export purposes from this list we would leave out the Bishop Pippin, and Talman Sweet, and add the Duchess, Dudley, Wealthy, and Alexander or Wolfe River. For fuller information on this point, read the writer's article in the September issue of THE CANADIAN HORTICULTURIST for 1911.

QUEBEC

Prof. W. S. Blair, of Macdonald College, Que., recommends the following varieties of fruit as suitable for the province of Quebec:

Irrigation as Practiced in one of British Columbia's Now Numerous Irrigated Orchards
The irrigation company generally carries the water to the highest point in the orchard. The fruit grower then distributes it from there, as shown in the illustration.

Summer Apples—Yellow Transparent, Lowland Raspberry, Duchess of Oldenburg.

Fall and Early Winter Apples—St. Lawrence, Wealthy, Alexander, Wolf River, Fameuse, McIntosh Red.

Winter Apples—Milwaukee, Bethel, Canada Red, Blue Pearmain, Golden Russet.

ONTARIO

The fruits recommended for planting in Ontario are fully described in bulletin 179, issued by the Ontario Department of Agriculture, Toronto. Descriptions are given of the qualities of the different varieties of fruit are well as of the localities for which they are best suited.

For growth in the Ottawa Valley and in the eastern part of the province not elsewhere enumerated, south of latitude forty-six degrees, Mr. W. T. Macoun, horticulturist at the Central Experimental Farm, Ottawa, recommends the following varieties of apples:

Commercial and Domestic—Summer—Transparent, Lowland Raspberry, Duchess, Langford Beauty.

Autumn—Dudley, Wealthy, Alexander, McMahon.

Early Winter—McIntosh, Fameuse, Rochelle, Wolf, Baxter.

Winter—Milwaukee, Bethel, Scott.

Additional varieties suggested for domestic use are:

Autumn—Peach of Montreal, St. Lawrence.

Winter—Swayzie, Peewaukee, Golden Russet, Rufus.

Crab Apples—Commercial and Domestic—Whitney, Martha, Hyslop.

BRITISH COLUMBIA

Mr. R. M. Winslow, the provincial horticulturist, writes us that in British Columbia, on Vancouver Island, the Wealthy and King apples are the varieties now most largely planted, while Grimes Golden is becoming more of a favorite as another winter apple suitable to go with the King. In pears, the Bartlett, Boussock, Bosc, Clairgeau, and Anjou have all done well, and plantings are being increased. By intensive culture, the Olivet Cherry has been a fine commercial proposition around Victoria, and is worthy of extended planting. The Magoon strawberry meets with more general approval than any other variety, being extremely well adapted to local conditions, attaining a good size and yield in the dry summers prevalent here.

In the Lower Mainland country, the Dunlop and Magoon strawberries are proven, the latter preferably for local and the former for long-distance shipments. The Cuthbert raspberry is well proven, and is one of the best commercial propositions. Large fruits are not as favorably reported as the small fruits mentioned, but the Yellow Transparent and Duchess give good returns, because of the earliness with which they can be put on the Prairie markets by express and the Wealthy and King, among later apples, are giving good satisfaction. Here, as on Vancouver Island, the planting of pears, particularly Clairgeau and Anjou, is being more extensively carried on.

In the Thompson River Valley, particularly Walhachin and Kamloops, the Transcendent, Wealthy, McIntosh Red, and Jonathan have proven themselves as the best commercial varieties of fruit, while in the Salmon Arm and Armstrong District, a little further east, the same varieties, and also Wagener, Grimes Golden, and Northern Spy, have been settled on as furnishing the most suitable types of apple to grow.

In the Upper Okanagan, the Transcendent Crab, Wealthy, McIntosh, Jonathan, and Wagener are being steadily increased. In the Southern Okanagan, the McIntosh, Jonathan, Wagener, Rome Beauty, and Spitzenberg, are recommended. For the Similkameen, Jonathan, Spitzenberg, Yellow Newtown, Winesap and Rome Beauty are very deservedly popular, while Delicious is also being extensively tried out. In the Grand Forks and Boundary Districts, the Wealthy, McIntosh, and Jonathan have been proven by extensive plantings, and are to be recommended for further extensions to the orchard area.

In the very extensive West Kootenay country, Wealthy, McIntosh, Jonathan, Wagener, and Northern Spy do very

A Twelve Year Old Northern Spy that Produced Five Barrels and One Bushel Last Fall.
This tree, grown in the orchard of Geo. Mitchell, Clarksburg, Ont., produced ninety to ninety-five per cent. number one apples, all highly colored.

well, while Gravenstein, King, Cox's Orange, and Ontario have all done well, and meet with the approval of experienced fruit growers. In this district, increased plantings of strawberries of the Magoon and Royal Sovereign varieties are being made, and can be further recommended.

Best Varieties of Small Fruits

Grant S. Peart, Burlington, Ont.

IT is a horticultural fact that certain varieties of small fruits are more profitably grown in some sections of Ontario than others. But this does not seem strange when we consider for a moment the many sorts of climatic conditions prevailing in different sections of Ontario, and our great variety of soils.

The adaptability of some varieties is limited to a small area, while other sorts seem to thrive over a wide range of country. Probably all varieties are affected, more or less, by soil conditions, exposure, elevation, climate, and atmospheric peculiarities. Hence the question as to whether a variety is a profitable one to grow in a certain district will largely depend on the influence it receives from the foregoing factors in that district. When selecting varieties for planting it is essential that we learn whether they are hardy or not and whether they are adapted to the soil we have.

If a variety is subject to winter killing, as a general rule it is not a profitable one. The canes, plants, and so forth, are so set back, just before the fruiting season that poor crops result. The plants spend most of the spring and summer in an effort to renew their vitality from the previous winter's shock. A grand example of a variety that suffers in this way in localities north of the climatic zone of Niagara is the Kittatinny blackberry. In the Niagara District it is perhaps the most profitable berry of its kind, but it is too tender in a more severe climate.

The following includes the more profitable varieties of small fruits for the Burlington district:—

Strawberries—Early, Michels. This variety, though the earliest of all, only yields about two or three pickings, thus is profitable to grow only on the earliest of lands for the first market.

Bedewood, not as early as Michels, but a heavy bearer, consequently the fruit is small if picking season is dry. The berries are soft and not a good color for canning purposes. It is a self-fertilizing variety and gets its place among the leading varieties because of its heavy cropping qualities.

Medium season—Gibson and Parson's Beauty. These no doubt are one and the same variety, for the plants and berries of each are very much alike. The Gibson is a very popular variety. There is double the acreage of Gibson in this district than any other variety. It seems to be adapted to a wider range of soils than some other varieties. It bears heavily and carries a dense foliage, which affords shelter to the berries from the scalding effects of the sun and helps to retain moisture.

Glen Mary is a vigorous productive variety. The berries are large and of good quality. Last year this variety demonstrated its superior qualities, resisting drought.

Late season—Williams still holds a place among late varieties because of the firmness of the berries. They are particularly adapted for canning purposes.

RASPBERRIES

The Marlboro, Herbert, and Cuthbert are early, medium and late in season. Where all three are grown the picking season is continuous while it lasts. The writer believes it would be wise to give the Marlboro a rest for a few years so as to discourage the many insect, fungus and bacterial pests that it is subject to, and give the stock a chance to regain vigor.

The Herbert seems to be disease resisting so far, doubtless due to its natural vigor, and little mistake would be made if a large proportion of new plantations are of the Herbert variety.

The Cuthbert is still the leading raspberry in commercial plantations, but rigid inspection must be given the plants when planted and all diseased and weakly ones discarded.

BLACKBERRIES

Agawam is an early variety and hardy, vigorous and productive.

Snyder is the leading variety for midseason. It is hardy and productive, but the quality of the fruit is inferior but firm, and stands shipping well.

Kittatinny—The berries are large and the quality first-class, and as a general rule the cane growth is vigorous. The natural soil for the blackberry is a loam with a quick sand bottom.

BLACK CURRANTS

Champion is the chief commercial sort. The bush is small and very productive. The fruit is large.

Naples and Lees have the bad habit of producing too much wood and not enough currants.

Lady Grey and the Gardens at Rideau Hall

W. T. Macoun, Dominion Horticulturist, Ottawa, Ont.

WITH the departure of Lady Grey from Canada lovers of flowers and gardens have lost a warm friend, and one who will long be missed. Wherever Lady Grey went in this country she impressed her love of flowers upon

Lady Grey

those whom she met and encouraged many to improve and beautify their homes. During her sojourn in Canada there has been a more marked development in gardening than in any previous period of Canada's history, and while there has been a number of influences at work, she has played no small part in bringing about the widespread interest which there is to-day.

A concrete example of the way Lady Grey lent her influence was the "Lady Grey Garden Awards," a garden competition which under her patronage has been held in Ottawa for the past six consecutive years, and for three years before by Lady Minto, who inaugurated it. During these nine years no less than one hundred and twenty-four different gardens have been entered in competition, most of them during the past six years. It is believed that this garden competition has done much to improve the gardens in Ottawa.

THE TRUE GARDENER

The true horticulturist, however, must have a garden of his own if he or she is to be of the greatest assistance to fellow gardeners. In this respect Lady Grey is a true gardener. Belonging to a family noted for their love of flowers, she has not been content to see others plan and plant, but while residing at Rideau Hall has done both herself.

It has been the writer's good fortune to have had many conversations on gardening with Lady Grey and to have been shown her treasures at Government House by herself. What has impressed me more than anything else has been her knowledge of varieties and her ability to remember the names of new plants. How few Canadians, even among our most enthusiastic horticulturists, are like her in this respect? How much more interesting it is to know the names of the species and varieties of plants we grow than to merely know that they are phloxes or pæonies or irises.

The effects in a garden depend so much on color, contrasts in color, and the blending of colors that there is a boundless field for resource in the planning and planting of a garden. Good taste in this respect is all important in gardening. It is unnecessary to say that Lady Grey had this in the highest degree and it is unfortunate that she was not able to remain long enough in Canada to bring about all the changes in the gardens and grounds at Government House which I know were in her mind. She had in a large degree the desire which all enthusiastic horticulturists have of getting new things of merit for her garden and of giving to others interesting plants which she had. She paid many visits to the Experimental Farm to take notes on plants which pleased her, and wherever she went she endeavored to obtain new and choice things.

LOVED WILD FLOWERS

Lady Grey showed an especial interest in Canadian wild flowers and before she left had brought together quite a large number of the more ornamental species at Government House. So keen was her desire to see Canadian flowers growing in their native wilds that she visited out of the way places to do so. One instance of which the writer had personal knowledge was a trip to see the showy lady's

One of the Flower Borders and a Portion of the Greenhouses at Rideau Hall.

—Photo taken especially for The Canadian Horticulturist.

A Pleasing Effect in the Gardens at Rideau Hall.

slipper (Cypripedium spectabile) in a distant bog. Neither heat nor mosquitoes daunted her, but pulling on a pair of rubber boots she entered the swamp and saw these lovely flowers in great abundance.

THE GARDEN AT RIDEAU HALL

A little has been said of Lady Grey's influence on horticulture in Canada, and of her knowledge and love of flowers. It remains to record some of the things she accomplished at Government House itself. When she came to Ottawa the conservatories at Rideau Hall were small and comparatively uninteresting, but through her influence a fine range of houses was built in which are grown practically all the cut flowers used at Rideau Hall, and many other ornamental plants. One of the illustrations shows a section of these.

There had been little done to make a good herbaceous border at Government House. Lady Grey took it in hand and after several years hard work she had the satisfaction this year of knowing that her work had not been in vain. In the past the plants suffered during dry weather, but she had the border subirrigated by means of tiles, which has been very effective in keeping the soil moist and the plants have made much more satisfactory growth since. Two years ago she planted grape vines between the two borders and made a pergola or archway of the vines. The illustration on the front cover shows how effective this is.

Many fine herbaceous perennials are now planted in this border, which will long bear the impress of Lady Grey. Much effective planting has been done in recent years on another border, the one with the palm house in the rear, and the smaller borders about the conservatories. The Hall itself has received more attention than ever before. It will be seen from the illustration that climbers have not been neglected.

THE PUBLIC WELCOME

One of the most satisfactory and pleasing bits of planting which Lady Grey planned was the planting of thousands of bulbs of narcissi and tulips, in the grass along the roadside and in the park belonging to Government House. Everyone was welcome to walk in and see these charming flowers when they were in bloom in the spring. The great masses of them everywhere in abundance, their striking contrasts of color and their setting among the trees ,was a delightful picture. The planting of bulbs was, however, not confined to Government House grounds for in Rockliffe Park, near by, many children helped to plant the bulbs of tulips and narcissi, which for several seasons have been a striking feature of the park in spring.

The last improvement which Lady Grey effected at Government House before she went away was the removal of an arbor-vitæ hedge which restricted the view on the west side of the grounds and hid the trunks of a fine row of hard maples, spoiling the effect. With the removal of the hedge there is a more extensive view and when the planting which was planned is completed there will be a pleasing vista with white pines in the distance. When the hedge was removed a terrace or parapet was made with steps leading down to the level of the maples, which is also a marked improvement.

The results of Lady Grey's work on the Government House grounds and gardens will be that those who follow her will endeavor to maintain the standard she has set and possibly cause still further improvements to be made.

The Planting of Climbers was Encouraged by Lady Grey.

The Care of Sword Ferns

A. V. Main, Ottawa

When ferns display a tinge of yellow it may be due to several errors of management. The most likely one is that the soil has been allowed to get into a sodden, pulpy mass. Lack of drainage at the bottom of the pot, and the presence of

worms is detrimental. They seem to grind the soil too fine, and it gets sour and wet. In such cases re-pot into clean pots, using fresh soil. Shake off all the poor soil from the roots, and place them in a pot that will take about an inch of soil around the outside.

Ferns enjoy a cool position, about fifty degrees, in preference to being near radiators or hot pipes. Watering must be done with a system and applied in good quantity, when the soil gets dry. In winter a whole week may elapse without water being required, and when given it should be tepid. Ferns like all the winter sun and light procurable. Transfer them from the dining room table and other decorative points to the window. Take them to the bathroom, and give them a spray, to wash dust off, and clean the plants generally. Plants in four, five and six inch pots that are full of roots, will benefit by being put into a size larger pot. Re-potting should be done in February at the earliest. Clay's fertilizer and a weak solution of soft coal soot in water are excellent stimulants. The finer sorts are rather fastidious to manage, and want closer attention. The standard Boston fern, with long, hardy fronds, is still the leader of all ferns.

Plants and Flowers for Every Window

Wm. Hunt, O. A. C., Guelph, Ont.

THE first thing to be considered in connection with winter gardening is the selection of suitable plants for the windows they are to grow and flower in. It would be useless to select flowering plants that require a good deal of sunshine for a window, where very little light or sunshine prevailed. On the other hand, there are only a few foliage plants that will not succeed much better in comparative shade, than they will, in a very hot, sunny window. Coleus and Iresine are exceptions, as these require some sun. Ferns also like a position where there is very little direct sunlight.

White Swan Geranium
This is a well grown plant for winter flowering.

As a rule, it is safe to select all foliage plants (except the Coleus and Iresine named) and ferns, for a window where there is very little sunlight. For a bright, sunny window, flowering plants as a rule are best. No one rule, however, will apply strictly in all cases. A great deal must be learned by local experience as to what plants are best suited for their particular surroundings and conditions.

ENVIRONMENT AND CARE

Temperature and atmospheric conditions are great factors in attaining success in plant growing. The temperature of most dwelling houses is warm enough for almost all window plants. A temperature of from fifty to sixty degrees Fahrenheit at night and from sixty-five to seventy in the day time, will be high enough for almost any collection of window plants.

Plants like a slightly lower temperature at night than in the day time. It is natural that plants should have rest at night. A slightly lower temperature and darkness induces rest in plant life. Cold draughts of air should be prevented as much as possible, from striking directly on the plants. A thick window blind or thick sheets of paper between the window and the plants on cold winter nights, are often advisable. In giving ventilation, open the windows at the top and ventilate only on fine, calm days. Ventilate as often as possible under these conditions. Plants like fresh air.

ATMOSPHERIC CONDITIONS

A moist, humid atmosphere, although it is one of the main factors necessary to success, is often lost sight of by plant lovers. The remark is often made, "It is easy enough to grow plants in greenhouses where there is plenty of heat and light." Few greenhouses are, however, run at a higher temperature than most dwellinghouses. In the matter of light, greenhouses certainly have an advantage. By a proper selection of plants for a window this trouble can be modified to a great extent. But the moist atmosphere that is so essential to plant life is not so easy to obtain.

The dry, arid condition of the atmosphere of most dwellinghouses is one of the worst conditions to contend with in growing plants. The fumes from illuminating, furnace or stove gas are also very harmful. These last, however, should never be allowed to exist to any great extent in any dwellinghouse. The best element, however, to counteract all of these conditions is atmospheric moisture, the most difficult element to obtain under ordinary dwellinghouse conditions.

In a greenhouse, water can be freely used to obtain a moist atmosphere. Not so in a dwellinghouse. There are, however, various factors that can be brought to bear to help secure these conditions. One is to spray the foliage of the plants with clear tepid water on fine warm days. The under side of the foliage especially should be sprayed. There is no better appliance for that purpose than one of the "Scollay Rubber Sprinklers," having an angle nozzle attachment. The angle or bent nozzle is indispensable. The plants can be sprayed with this without the necessity of removing them to the sink or bathroom to spray them. All seed stores offer this sprinkler for sale. It is one of the best appliances also to use for applying liquid insect remedies. If pure water is judiciously used in spraying, it will help materially to keep down insects, especially aphis, red spider, and thrip. Rough or hairy plants should not be sprayed very frequently or heavily.

AIDING EVAPORATION

The window bench or table the plants stand on should be made so that about half an inch in depth of fine clean gravel can be spread over it. The gravel not only has a nice clean appearance, but it can be sprinkled frequently so as to keep it moist. The evaporation of the moisture from the gravel will assist materially in creating a moist atmosphere around

A Chrysanthemum Plant of the Pompon Type.

the plants. If the gravel mentioned is not available, a piece of oilcloth is a fairly good substitute. This can be dampened quite frequently.

Flower saucers, for the pots to stand in, are of great service. If about half an inch of water—not more—is constantly kept in the saucers, it will benefit the plants considerably while evaporation is going on. Saucers or pans of water stood around near the plants near the heat radiators are of great benefit to plant life.

WATERING PLANTS

Water plants, in winter especially, with tepid or lukewarm water, rain water preferred. Never use ice cold water. Stand the water in a tub or pail for a day or so to soften before using it. Add a little warm water if necessary so as to get the water about the same temperature as the room—fifty to fifty-five degrees. In watering plants always give sufficient so that it runs through the aperture in the bottom of the pot. Then withhold water until the surface of soil shows signs of dryness. Do not keep the soil soddened with water all the time, or on the other hand allow the plants to wilt for the want of water. Intelligent watering of plants has a great deal to do with the results obtained.

SUITABLE VARIETIES

The following lists of flowering and foliage plants will give a good selection

A Window of Plants

In the back row are callas, shrubby begonias, Boston ferns and asparagus plumosus. In the centre is a large Chinese Sacred Lily. On either side of it are white hyacinths. In the front row are silver leafed geraniume, primulas and bloom-forever.

for both sunny and partially shaded windows, especially for winter season effect:

Geraniums—Single varieties are best for winter flowering as a rule. Good single varieties are: Phyllis, salmon rose; John P. Cleary, orange scarlet, L'Aube, pure white; Dryden, white and rosy red. Double varieties: Marquis de Castellaine, dark red; M. Anatole Roseleur, light pink; LeSoliel, dark scarlet; White Swan, pure white; S. A. Nutt, crimson; Mme. Jaulen, apple blossom.

The Ivy-leaved, Silver, Bronze, and Fragrant-leaved geraniums are especially effective as window plants. Mme. Salleroi and Wm. Languth, silver leaved; Rose and Peppermint scented for fragrant kinds; Alliance, ivy-leaved—are good varieties to grow.

Begonias — B. argenta guttata, B. manicata aurea, B. Otto Hacker, B. Thurstonii, B. rubra, B. Paul Bruant, and other varieties.

Primulas—B. sinensis (Chinese primula), P. obconica.

Calla—(Calla Lily), Richardia Ethiopica.

Chrysanthemum—Pompon and Japanese types. Pompons: Snowdrop, white; Klondike, yellow; Julia Lagravere, dark red. Japanese large flowering: Nellie Pockett, cream color; Early Snow, white; Glory of Pacific, pink; Golden Glow, bright yellow.

Impatiens Sultani—(Bloom for Ever).

Lilium Harrisii (Easter Lily), Lilium auratum, Lilium speciosum rubrum, etc.

Petunia (Single or Double).

Epiphyllum (Lobster or Christmas Cactus).

Pelargonium (Lady Washington Geranium).

Freesia refracta alba (Bulbs with sweet-scented flowers).

Valotta purpurea (Scarborough Lily), bulb, bright red flowers.

Amaryllis in variety (bulbs).

Otaheite Orange (flowers, fruit, and foliage are attractive).

Winter Flowering Bulbs—Roman and Dutch Hyacinths, Narcissi (Daffodil) in variety. Tulips, Single and Double, early flowering. Chinese Sacred Lily grown in saucers in gravel.

Best varieties of Bulbs for pot culture. For early flowering—Roman White Hyacinth, Paper White Narcissi, Chinese Sacred Lily. For later flowering—Dutch Hyacinths in variety, single and double; Narcissus, Von Sion, Bicolor Victoria. Princeps. Tulips: Murillo, Couronne d'Or, Cottage Maid, Chrysolora.

To have all or any of these plants in the best possible condition for the winter season, a great deal of preparation must be done the previous summer and autumn. A few hints on the culture of some of the kinds named may be helpful to plant lovers.

Geraniums cannot be dispensed with in the majority of windows. Too often, however, the all enduring nature of these plants is severely imposed upon. On that account, one seldom sees a really good specimen in a window. The plants that are expected to flower all the winter are very often plants that have been doing duty planted out in the flower bed or border all the summer. These are often dug up in the fall, potted and brought into the window just as they are. The result is a very large pot, a very poor plant, with long bare stems, except just at the top where there may be a few fairly fresh looking leaves, and

Nellie Pocket Chrysanthemum

This variety of chrysanthemum makes a good pot plant.

perhaps a very small truss or two of bloom during the winter or in early spring.

FOLIAGE PLANTS

Foliage plants suitable for a shaded or partially shaded window include the following:

Anthericum vittatum variegatum, Anthericum picturatum, Araucaria excelsa (Norfolk Island Pine), Asparagus plumosus, Asparagus Sprengeri, Aspidistra lurida variegata, Dracaena indivisa and Dracena australis Cordyline, Farfugium grande (Leopard plant). Ferns—Nephrolepis Bostoniensis (Boston Fern), Nephrolepis, Whitmani, Nephrolepis Scotti, and other varieties.

Ficus elastica (Rubber plant). Palms—Kentia Belmoreana, Kentia Forsteriana, Phoenix rupicola, Phoenix reclinata, Phoenix dactylifera (Date Palm), Latania Borbonica (Fan Palm), Cocos Weddeliana, Pandanus Veitchii, Sansevieria zeylanica (Bow-string Hemp Plant).

Most of the foregoing plants will succeed fairly well where flowering plants do, but very hot sun does not agree with them so well. Very few of the foliage plants named can be raised and propagated successfully in a window. It is best to purchase them in the first place from a florist. This class of plants requires a moister atmosphere and a warmer temperature, as a rule, than do flowering plants. As the foliage of most of them is usually of a glaucous or glossy nature, the foliage requires frequent sponging and spraying for the plants to present the beautiful glossy appearance that is their chief point of beauty.

Rubber Plants

A. V. Main, Ottawa, Ont.

Rubber plants are favorite house plants with many and about the most simple

to care for. They do not necessarily need a warm temperature, and are adaptable for centres or corners of rooms without the window light. The large leaf is a good dust catcher, and this ought to be sponged off just as regularly as the piano needs dusting.

Being of an upright habit, rubber plants get tall and leafless very often at the base. They then become ineffective and cumbersome. About fifteen inches of the top of a tall plant would make a nice plant. Such an accomplishment is within the reach of the novice. At the desired place make space by cutting off a couple of leaves. With a sharp knife and a steady hand, cut the stem three-quarters through. Keep this cut open about a quarter of an inch with a small piece of wood. Procure some sand and moss and tie it firmly around the wound. Place plenty of sand next the wound and the moss or some machine waste to keep the sand in place. Always keep this moist, and in a warm situation. In eight weeks more or less roots will be active. Repot into a five inch pot by cutting the remaining one-quarter of the stem when the roots are quite visible around the moss. With good house accommodation ferns and rubber plants get better treatment when kept indoors in summer as well.

Hanging Baskets

A. H. Ewing, Woodstock, Ont.

The accompanying illustrations show baskets planted with three plants each of Lophosperum Jasminaides. They were secured in September. when the plants were as green and vigorous and still flowering as they were in June.

Eight of the baskets were kept during the past season on the verandah shown, as much alike as eight peas, and three planted with Maurandya Barclayana. These latter, which are not shown in the illustration, have a tendency to grow up rather than down, but make a very pretty basket when planted alone, a perfect ball of green, with here and there a spray of flowers from the top of the wires to the bottom of the basket. Fourteen-inch baskets are used, and good, rich soil, with a handful or two of bone-meal in each, and plenty of water all the time.

Nearer View of One of Hanging Baskets Shown in the Larger Illustration
—Photo taken in September.

Hanging Baskets in Which a Pleasing Effect is Given by Plants of Lophosperum Jasminaides.
(See adjoining article)

New Year Plans For The Garden

John Gall, Weston, Ont.

AT this season many flower growers are laying their plans for next summer's gardens. In garden work there is a starting point, as in all other business operations, and it is impossible to succeed without beginning at this point. Start slowly; avoid extravagance; do not cultivate beyond your knowledge; begin with plants that succeed under adverse circumstances, and learn from them how to grow other and more difficult subjects. Do not think because your neighbour spends hundreds or perhaps it may be thousands upon plants annually, that it is really necessary for you to do likewise. On the contrary, bear in mind that he is the best gardener who produces the best and largest crops at the least expense.

In the beginning plan to work your soil deep, make it rich and keep it clean: then you will have made a good start; continue to keep your garden clean and you will be the winner in the race. Make up your mind to give the weeds to understand from the beginning that your garden is not their home. Keep your soil so well worked around your plants that weeds cannot grow. This will make the plants your active, growing friends. They will be faithful to you as long as you are faithful to them.

For sowing, select seeds of some of the most choice annuals, such as petunias, calendulas, zinnias, balsams, phlox, mignonette, nasturtiums, dianthus, salvia and asters. A packet of these will cost but fifty cents each. A few genuine mixed gladiolus and other bulbs will not cost much more, and all together will give you a beautiful flower-garden—one that will afford much pleasure and at the same time stimulate you to greater effort.

WHAT TO AVOID

Do not run wild after novelties. Bear in mind that high-priced seeds, bulbs or plants do not necessarily give the most beautiful flowers or finest display. Supply and demand regulate prices. A plant that was plentiful and cheap thirty years ago may now sell at a substantial figure because of its rarity. Therefore start cheaply, buy a dozen of plants or packets of seed for a dollar instead of only one plant or one packet, and when you have become thoroughly acquainted with the culture of these, and can manage them well, you can safely indulge in some of the more expensive kinds.

Many people who take but little interest in their gardens at first, become successful and even enthusiastic over the work as they become acquainted with plants and interested in their growth.

Such people soon get hobbies, which they are apt to ride at a furious rate until all out of breath. They want and will have every variety of the plant with which they are smitten. Such gardeners we find exceedingly useful; you can learn from them what *not* to buy—information of far greater value than to know what *to* buy.

The secret of success in gardening is selection, a thorough knowledge of plants and their various requirements before purchasing. Many flowers will succeed well in a given locality where others will not; therefore it is of the greatest importance to know plants and the place you have for them. You may rest assured that where grass and weeds will grow flowering plants will, provided weeds are kept down. Start cheaply but with a determination to succeed, until you know what you are able to do; then be governed by your taste and the means you have to gratify it.

New Ontario For Seed Potatoes*

T. G. Raynor, Department of Agriculture, Ottawa.

EXPERIMENT stations in Canada and the United States have given a good deal of attention to the potato, in an attempt to work out the best plans for growing, storing and marketing this important crop.

After testing the seed grown in New Ontario for a couple of years or so in the older parts of the province and finding it satisfactory, as I believe it will be found, it might pay the association to buy some land in a good locality in New Ontario and secure a northern man who would develop into a potato expert, or perhaps educate and send a local man up there to grow seed tubers. Incidentally it might be made a commercial venture, not only in growing seed tubers, but in producing them for the local and Toronto markets.

THE EXPERIMENTAL PLOTS

It was my privilege last August to visit and report on the six plots of potatoes in New Ontario to which reference has already been made. At the time of my visit they were in full bloom. The tubers were setting; in the case of the Early Olive many were as large or larger than hen's eggs. There was quite a variation in the stand of the crops. In some of the plots there were a number of blanks; two were so bad that replanting had to be done with other varieties, so that those plots would be useless so far as this association was concerned. The blanks were supposed to be due to the use of cut seed, which rotted as a result of a heavy rain just after planting. The vines of those which survived or which were planted after the rains looked vigorous and were generally healthy. The beetle is not a serious pest there, one application of Paris green seems to be sufficient. Blight seems unknown, but scab has made its appearance. Some of the growers had good crops, while others did not do so well.

METHODS IN NEW ONTARIO

Most of you are aware that the soil of New Ontario is a friable clay with more or less humus in it. The amount of humus usually depends on how closely it has been burned to the clay. As it is either virgin soil or has been cropped only a few years at the most, no one uses fertilizers for potatoes unless it be a small amount of stable manure. The texture of the soil shows both potash and phosphoric acid present in large quantities and in a readily available form. By common consent, fall plowed land is preferred to spring plowed for potatoes. Some replow in the spring before planting. The seed is usually selected from the bin in the ordinary way and taken out of the cellar just before planting. For economy many cut their seed, but a large number advocate the use of the whole tubers as they are less liable to rot and produce stronger plants. The ground is fitted for planting from May twentieth to June tenth by thorough cultivation and opening the furrows about three feet apart. The seed is planted in drills and cultivated one way.

The after cultural methods are much the same as are followed in old Ontario. The harrow is used before the plants appear at the surface, and again when the vines are two or three inches high. The horse hoe follows this, deeply at first then shallow, at intervals of a week or ten days until they come in bloom. In some cases the hilling, which is quite the universal practice there, is done gradually; in other cases it is done with the last cultivation. Potatoes are ready for digging the last week or ten days in September. They are usually put up in the cellars direct.

Improvement can be made on their general methods whereby larger crops may be grown. They, however, grow satisfactory crops. Taken in all, I believe that potato growing may be successfully exploited in New Ontario.

It may interest this association to learn that in a recent competition in New York city a Mr. A. Smith, of British Columbia, landed a one thousand dollar trophy for the best potato exhibit. Mr. Smith is a member of the Canadian Seed Growers' Association, and has been working along the lines of selection adopted by the association for some time.

*A paper read at the annual convention of the Ontario Vegetable Growers' Association held in Toronto in November.

Black Rot of Celery

A. McInnis, London, Ont.

While in the storehouse celery is sometimes attacked by a black rot which if not checked will sometimes destroy the entire crop. The disease is induced by too heavy watering and by wetting the tops of the celery after it has been stored, also by keeping the storehouse too warm without sufficient ventilation.

Some varieties have a greater power of resisting the attacks of disease than others. It is wise to test the newer sorts and secure if possible one that will combine resistance to disease with suitable market value.

The Question of Help

A shortage of help is proving a serious problem for many market gardeners and vegetable growers. This question was discussed at the recent convention of the Ontario Vegetable Growers' Association.

Mr. W. J. Kerr of Ottawa, criticized severely the class of immigrants that have been coming out from the old country, stating that some were not good, and never would be. He maintained that not one man in nine was of any use for the market gardener. Mr. J. W. Rush, Humber Bay, Ont., stated that he had considerable sympathy for the immigrant for once upon a time he had been one himself.

It was stated by Mr. W. J. Robb of

A Profitable House of Cucumbers.

The illustration shows a portion of a great crop of early cucumbers grown a year ago by Mr. R. H. Ellis of Leamington, Ont. As will be noted, the cucumbers were grown to single stem and run up to the roof of the house. Some of the vines were sixteen feet long. The rows were three feet apart and the plants three feet apart in the row. The variety grown was Perfection White Spine. From ground occupying 60 by 100 feet floor space in his greenhouses Mr. Ellis netted a little over $1,200.

A Sample of What Western Canada Can Do in the Growing of Vegetables.
These vegetables are the product of one hill of pumpkin. They weighed 630 lbs. and were grown by Ed. Sanderson of Dauphin, Man.

St. Thomas, that he had succeeded in placing near St. Thomas some splendid men from the old land. One of these men claimed that near where he left in the Old Country there were many good men who would be glad to come to Canada were they interviewed by some one whom they knew. Mr. Robb wanted to know if there were any way in which the St. Thomas branch of the vegetable growers' association could arrange to send an agent to Great Britain acting in conjunction with the Canadian Government to bring out such help.

Attention was called by President Thomas Delworth to the fact that it is important that growers should so arrange their work that they will be able to keep men by the year. Mr. Rush maintained that many of the immigrants who at first appear to be incapable might develop into good men were they given more sympathetic treatment by their employers.

Results From Use of Fertilizer

Wm. H. Taylor, St. Giles, Que.

THE potato crop having been almost a failure last fall, I believe you would be glad to give your readers the results of my endeavors to overcome the unfavorable conditions of the season; also the different results from certain fertilizers for this crop. My land is clay loam. It was under buckwheat last year. As soon as the buckwheat had started, I spread a light dressing of barnyard manure,—horse, cow and hog,—as if I wanted a crop of buckwheat, and ploughed the whole down when it was about two inches high. I divided the field into three parts. Plot number one was not fertilized. Plot number two was fertilized at the rate of two hundred pounds sulphate of potash, four hundred pounds acid phosphate and one hundred and twenty pounds of nitrate of soda per acre. The whole field was well harrowed and planted to Sensation potatoes. Number three plot was fed at the rate of four rundred pounds of acid phosphate and one hundred pounds nitrate of soda an acre.

The first two weeks the weather was splendid, but our first rain was not until July 18th, followed by many days when the temperature ranged from ninety-six to one hundred and four degrees in the shade, and from one hundred and eight to one hundred and thirty degrees in the sun. To prevent too great evaporation I kept the cultivator and hoe going nearly all the time. We got a few light rains in August—our hopes revived, things looked well; but on the night of August thirty-first, potatoes, tomatoes, beans, corn, and so forth, were killed to the ground. The potatoes were certainly not more than half grown. However, I feel that God rewarded my persistence and courage, as the following results seem to show:

Plot number one, which received a light dressing of manure only, yielded at the rate of one hundred and ninety-four bushels.

Plot number two produced two hundred and forty-two bushels.

Plot number three two hundred and four bushels.

The latter plot gave twelve bushels more than plot number one, and plot number two gave forty-eight bushels more than number one. This means in the one case an increase of value at seventy-five cents per bushel (they are going up fast and will be at least one dollar in the spring) of nine dollars, and in plot number two, forty-eight bushels at seventy-five cents, gives an increase of thirty-six dollars.

All up to date farmers will admit that the constant surface cultivation did a great deal of good, but will they give any credit to the green buckwheat ploughed in? I do.

Vegetable Jots

Asparagus grows readily from seed. One ounce is sufficient for about fifty feet of drill.

It is time to begin planning the garden for next summer. Select your seeds and order early.

Peppers need a rich sandy loam and frequent cultivation.—G. Bremner, Burlington, Ont.

In bleaching celery, care must be taken not to have more of the early crop boarded in than will be sold within two weeks. It is better to have it green when marketing it than to have it over-bleached.—George Smye.

Tomato seed should be sown in the frame about ten weeks before it is safe to set the plants in the open ground. As soon as they are large enough to handle set them out two inches apart in another frame and as they grow stronger transplant again at four inches. This produces short stocky plants. Every time they are moved increases the chance for earliness.

Our tests of vegetables have proven very interesting. We now have in progress tests of thirty-three early and thirty-four late varieties. Some are probably new to a considerable portion of the public, and have merit, while a large proportion appear to be well known varieties under a different name, and frequently the name is made up of a number of descriptive adjectives which are misleading. I have distinct recollection of one variety in our test that is being sold under four names. Work of this kind is unfortunate, and something should be done to straighten out the jumble of meaningless names and place them on a basis that is reasonably accurate and reasonably scientific.—Prof. C. E. Myers, State College, Pa.

The Only Way for an old countryman to make a success of vegetable-growing in Canada is to work for someone in the business for a year or two. He will have practically to forget all he knew, and to begin at the bottom of the ladder, for the climate, customs of the country, manner of growing, and marketing, are all different to the conditions in the Old Country. After he has gained that experience he will require capital of from $500 to $1000, according to the amount of land he wishes to work, to enable him to make a good start.—F. F. Reeves, Humber Bay, Ont.

The Canadian Horticulturist

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PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

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CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of the Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in			1907,	6,627
"	"	"	1908,	8,695
"	"	"	1909,	8,970
"	"	"	1910,	9,067
"	"	"	1911,	9,541

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant, we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, 'I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

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THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

HON. MR. DUFF SHOULD ACT

At the recent annual convention of the Ontario Fruit Growers' Association a resolution was passed endorsing the proposal that has been made frequently in these columns that the Ontario government should take the appointment of the fruit pest inspectors out of the hands of the township councils and conduct the work on a provincial basis. This should have been done long ago. The government has been warned repeatedly that injurious pests like the San Jose scale would continue to increase rapidly until such action was taken. Hon. Mr. Duff, the provincial minister of agriculture, has slumbered through it all, however, until there seems reason to believe that little less than the discharge of a blast of dynamite will lead him to take action. Our minister of agriculture does not seem to comprehend that his ability to hold the position he occupies can best be shown by anticipating the needs and demands of the public instead of delaying action until public opinion forces him to move.

When work of this character is left in the hands of local municipal bodies it is never discharged satisfactorily. While some may take effective action others decline to assert themselves at all, and the inertia of such more than offsets the good work done by others. The government recognized this weakness in this system of law enforcement by local bodies when a few years ago it took the enforcement of the sanitary regulations pertaining to cheese factories and creameries out of the hands of the local boards of health and placed it in the hands of provincial officials. The benefits that followed the change were most marked.

In certain portions of the Niagara district during the past two years the spread of the San Jose scale has been alarming. Not only have fruit trees been affected, but in some cases thorn trees, dogwood and other trees and shrubs have been almost wiped out where attacked. Some new diseases, the nature of which is not even yet understood by the growers, are now working great havoc in many orchards. It has been demonstrated that the local inspectors are utterly incapable of dealing with the situation as it should be handled. All eyes, in consequence, are on Hon. Mr. Duff. The question is, what is he going to do to see that the fruit interests are properly protected?

ENCOURAGE APPLE CONSUMPTION

One of the main explanations of the tremendous consumption in our Canadian cities of tropical fruits, such as the orange, grape fruit, dates and figs, may be found in the attractive manner in which these fruits are displayed in the windows and stores of our city grocers and fruiterers. Of late years apples have received more attention at their hands, but not nearly to the extent that is desirable.

The Commercial Club of Walla Walla, in the state of Washington, as a means of increasing the interest taken in the apple industry, as well as to increase the consumption of apples, has held two annual apple window displays which have proved so successful it is planned to conduct them every year hereafter. Three prizes, of twenty-five, fifteen and ten dollars, are offered to the merchants of the city for the best decorated windows during a specified week. Apples must comprise at least half the material used in the decoration. Allowance is made for the shape and size of the windows, so that the smaller stores have an equal chance with the larger ones. The windows are marked on points, as follows: Attractiveness, forty; originality, twenty; most advantageous use of apples, ten; inexpensiveness of display, ten; arrangements of signs, show cards, etc., ten. The judges are men brought in from outside cities.

Does this not offer a suggestion to some of our fruit growers' association? The offering of a few prizes in this way in certain of our leading cities would arouse interest, increase the demand for apples and set examples of window decorations that would soon be followed in smaller centers. Something of this kind requires to be done in order that our Canadian apples may take their proper place in our home markets.

COMPULSORY SPRAYING

British Columbia has had a law for some years making the proper spraying of orchards compulsory. So far we have heard no complaints against this law. While this may mean that it has not been strictly enforced, still we have reason to believe that the law is being applied as conditions require and that it is being attended by satisfactory results.

The state of Ohio, where conditions are closely similar to those which prevail in Ontario, has now followed this example. A law passed by the last legislature requires all orchards in which there are ten or more trees to be sprayed at least once between November first and April thirtieth. The preparation used must be such as will destroy San Jose, oyster shell and scurfy scale. A fine of twenty-five to one hundred dollars is to be imposed for each year spraying is not performed. This law goes into force next May.

We are so afraid of preceding public opinion in Ontario there is reason to believe that we are falling behind other provinces and states in several important respects. A compulsory spraying law in Ontario, as well as in our other eastern provinces, would not be any more drastic or any more of a hardship than the sanitary laws now generally in force which require the patrons of cheese factories and creameries to keep their stables clean, wash their separators and other dairy utensils regularly and to maintain cleanly conditions generally in connection with the handling of their dairy products. This matter of compulsory spraying deserves to be given more consideration than it has yet received in our eastern provinces.

So much interest was aroused by the trial shipments of Ontario tomatoes to the British markets made last year, the Ontario government might well issue in bulletin form the excellent paper on "Tomato Growing and the Possibilities of the British Market," read last month at the annual convention in Toronto of the Ontario Vegetable Growers' Association by Mr. Geo. Cooper, of Grimsby. While Mr. Cooper did not hold out hope for any speedy development of this trade between Ontario and Great Britain, he showed in a masterly manner that the development of such a trade is practical. He also showed plainly the difficulties in the growing and shipping of tomatoes, as well as in the marketing of them in Great Britain which confront us. We venture to say that Mr. Cooper's paper, which we purpose to publish in full in THE CANADIAN HORTICULTURIST, contained information that it would have cost the govern-

ment thousands of dollars to have secured had it been forced to gather the information for itself.

The Ontario Horticultural Association purposes asking the provincial minister of agriculture, Hon. Mr. Duff, to print enough copies of the annual report of the association to enable a copy to be mailed free to each member of a horticultural society in Ontario. This request should be granted without hesitation. The government deserves credit for the improvement it has made of late years in the quality of the paper used in these reports as well as in their typographical appearance. This good work, to be made complete, requires to be carried only a little further. This will be accomplished when arrangements have been completed which will ensure every member of a horticultural society receiving a copy of the report each year.

The officers of the Ontario Vegetable Growers' Association have lost no time in laying before the new Conservative administration at Ottawa their request that legislation be enacted establishing standard weights for vegetables by the bushel and by the bag. This request is so manifestly in the interests of not only the producers but of the consumers, also, we may naturally expect that the request will be granted readily by the government.

PUBLISHER'S DESK

As will be noticed by the circulation statement published on the editorial page adjoining, the average circulation of THE CANADIAN HORTICULTURIST during 1911 showed a marked increase over preceding years. It will be observed also that the circulation of THE CANADIAN HORTICULTURIST has been increasing steadily, even rapidly, for the past four years. Already there are indications that this year's record will establish another distinct advance. In all parts of Canada there is a marked increase in the interest being manifested in horticultural pursuits. The increased demand for horticultural information is reacting to the advantage of THE CANADIAN HORTICULTURIST, and its circulation is showing the results. Not only are we receiving a large number of individual subscriptions, but organizations are forwarding more subscriptions than ever before. Two large city organizations, for instance, which did not send THE CANADIAN HORTICULTURIST a single subscription will this year send us between one and two thousand new subscriptions. This all means that we will be able to continue to enlarge and improve THE CANADIAN HORTICULTURIST in many way in the future as we have in the past.

With this issue we introduce an important change in connection with the advertising policy of THE CANADIAN HORTICULTURIST, inasmuch as hereafter all advertisements will be accepted on a flat rate basis of a dollar an inch irrespective of the number of insertions. This means that small advertisers will pay less for their advertisements and some of the large advertisers slightly more. In common with most papers THE CANADIAN HORTICULTURIST has been charging small advertisers what proportionately have been high rates. On the flat rate basis hereafter all will be treated alike. The flat rate is the ideal basis of handling advertising both for the advertiser and the publisher. The advertiser can at all times figure just what his advertising is costing him and just what any increase or decrease in the space he is using will involve. He knows, also, that he is placing his business on the same basis as all other advertisers and that none, due to the intricacies of the average advertising rate card, are getting a better rate than he is. For the publisher it means an avoidance of the troubles incident to the adjusting of rates involved in the handling of different contracts, and it establishes a standard of value that facilitates the procurement of business and the ease of handling it. Advertisers are all times free to withdraw their advertising if they so desire. At the same time they know that if they desire preferred positions they must contract for it for considerable periods in advance. We predict that all our advertisers will be pleased with the change and that the volume of advertising in THE CANADIAN HORTICULTURIST will soon show a marked increase not only on this account but also on account of the increased circulation of THE CANADIAN HORTICULTURIST.

With the publication in this issue of the description of the garden at Ottawa of Lady Grey, by Mr. W. T. Macoun, we commence the publication of the first of a series of articles describing successful Canadian flower growers. Most of these gardens will be those of amateur growers. We expect that they will prove a most interesting and valuable feature of THE CANADIAN HORTICULTURIST during 1912. These articles alone should be well worth the price of a year's subscription to THE CANADIAN HORTICULTURIST.

The February issue of THE CANADIAN HORTICULTURIST will devote special attention to spraying. There will be timely, instructive articles in all departments dealing with this important subject. They will be written by well known authorities and will be full of interesting articles, well illustrated.

Ginseng Growers

The executive committee of the Ontario Ginseng Growers' Association, at the annual meeting of the association held recently in Toronto, was instructed to take up the matter of a central station for the drying and shipping of roots and communicating with merchants in China to handle the roots of the members of the association. The committee will report at the next meeting.

Papers were read on the washing and curing of roots, by Mr. Chas. Leggatt of Kingsville; by Rev. Dr. Medd of Goderich, on the "Effect of Seed Bearing on Root Development," and by H. Q. Watson of Newmarket, on "The Best Fertilizers." General discussion took place on all these topics as well as on the possibilities of germinating seeds the first year. This last discussion was led by the veteran grower and experimenter, Mr. P. Menzies of Milton, Ont. The meeting was full of interest and profitable.

The Canadian Horticulturist is in receipt of some preliminary advertising material for the Royal International Horticultural Exhibition to be held in London May 22 to 30, 1912. It is expected that this will be the largest horticultural exhibition ever held. King George has intimated his intention to offer a cup valued at $500 for the best exhibit in the show.

Never stop my subscription to THE CANADIAN HORTICULTURIST. I cannot very well do without it. Sometimes I neglect the small matter of remitting right on time, but I would not be without this valuable paper as a reference for ten times what it costs per annum.—James Barnes, Buctouche, N.B.

Why Read Advertisements?

"Why did you cut out the advertisements? That is the only part of a magazine that I read. I can write stories myself." This is what a well known novelist and writer wrote a friend who had sent him some magazines and had removed all the advertising pages to save postage.

More than one prominent man has said that if magazines ceased to publish advertisements they would stop taking them. They have not time to read the stories, but feel that THEY HAVE TO LOOK OVER THE ADVERTISEMENTS TO KEEP THEMSELVES INFORMED IN REGARD TO WHAT IS DOING IN THE BUSINESS WORLD. They find the advertising columns of the various periodicals they read the best means of keeping themselves posted along this line.

Did you ever stop to think how much you learn consciously or unconsciously through the reading of advertisements? How often you learn about some new labor-saving device for the farm or home, some new industry which has just opened up, some new use for an old article, or any one of the hundreds of things which you can make use of to add to your comfort, pleasure or profit, through reading about these things in advertisements in newspapers or magazines. MUCH OF THE KNOWLEDGE WE GAIN ABOUT THE ARTICLES WE WEAR, EAT, WORK WITH, OR USE FOR ANY PURPOSE, COMES THROUGH THE READING OF ADVERTISEMENTS. Advertising is simply news about the goods that are offered for sale, and when the advertisements are well written, it is very interesting news.

..Several advertisements in this issue of The Canadian Horticulturist contain news that will interest you. Look them over. There may be something advertised in this number that is just the thing you have been looking for. Or, there may be something that will save or make for you many dollars in the course of a few months. Write to those advertisers. You will find them willing and glad to tell you more about their goods.

Remember that WE DO NOT ACCEPT ADVERTISEMENTS FROM FIRMS OR INDIVIDUALS WHICH WE DO NOT BELIEVE TO BE THOROUGHLY RELIABLE. Within the past month or two we have refused to accept several advertisements which we did not feel we could recommend to our readers. This cost us something in loss of advertising revenue, but we felt that by keeping up the standard of the advertisements we print, we are not only acting in the best interests of our readers and advertisers, but of ourselves as well.

Don't hesitate to write to any of the advertisers in this issue of The Canadian Horticulturist. They have our recommendation.

Quebec Fruit Growers' Annual Convention

THE winter meeting of the Pomological and Fruit Growing Society of the Province of Quebec was held at Macdonald College December 5th and 6th. From the opening until the close of Wednesday night a spirit of hopefulness and encouragement pervaded the meetings. Every person was convinced that the fruit industry in the province of Quebec was at the dawn of a great awakening, and that the capabilities in this line were very great.

The meeting was called to order by the president, Rev. H. A. Dickson of Rectory Hill. Sharp on time the large assembly hall of Macdonald College was well occupied by representative growers from the province. Dr. Harrison welcomed the delegates to the college. The enthusiastic gathering and the excellent display of fruit surpassed anything he had seen in the province. He was satisfied that a still greater impression might be made if the fruit men, the vegetable growers and the florists would unite, and hold an exhibition in Montreal, which would surpass anything yet attempted in this province. He believed that such an exhibition might be made a financial success and that it would attract widespread attention.

The president reviewed the work done in the past and outlined the hope for the future. He said that the crying need of the people was for more information—exact information. One way of obtaining this was for the society to keep in touch with the trees purchased and distributed so that reliable data might be obtained concerning any variety in the different sections where fruit may be grown.

The election of officers resulted as follows:

Hon. patrons—Hon. Martin Burrell, Hon. Sydney Fisher, Hon. J. E. Caron and Mr. G. A. Gigeault.

Hon. president—Prof. W. G. Blair.

Hon. vice-president—Rev. H. A. Dickson.

President—C. P. Newman.

Vice-president — Father Leopold, La Trappe.

Sec.-Treas.—Peter Reid.

Directors—Messrs. G. B. Edwards, Chas. Byers, G. P. Hitchcock, A. D. Verreault, Auguste Dupuis, Robert Brodie, Dr. W. Grignon, H. W. Thompson and N. E. Jack.

INSECT PESTS

Mr. A. Gibson, of the Central Experimental Farm, Ottawa, was the next speaker. After pointing out the loss which annually occurred to the fruit industry in Quebec on account of the various insect pests which attack fruit, he confined his remarks to the Apple Maggot, the Codling Moth and the Plum Curculio. By precept and example Mr. Gibson showed the necessity for clean culture in the orchard, without throwing discredit on the standard sprays. Spraying is of little avail, however, in dealing with such insects as the Apple Maggot, which live and move inside the fruit, unless great care is exercised in gathering up all windfalls and destroying them. If not fed to cattle they must be buried or burned. This is essential if progress is ever to be made in dealing with such pests. The importance of cooperative work was also pointed out. Any man is much handicapped in fighting insects if he fights alone. Beside the unfairness, he cannot accomplish what he otherwise would if his neighbor fails to do his duty in the care of his orchard. This paper will be published in THE CANADIAN HORTICULTURIST.

J. C. Chapais, St. Denis-en-bas, in his usual pleasing manner, spoke of the recrudescence of orchard pests in Eastern Quebec. He referred to the fight which men were obliged to put up if they were to produce marketable fruit and to meet their competitors from the west. He was of the opinion that the department of entomology should send one or more experts to different localities, and to specialize on such insects as cause trouble there. Such experts should remain on the ground and study these pests in the orchard, until prepared to report on same. Judging from the approval which this statement received it was the unanimous wish of the association.

CLEAN CULTURE

Dr. H. T. Gussow, botanist of Central Experimental Farm, spoke on the Nature of Parasitic Fungi and their Influence on the Host Plants. The address was illustrated by lantern slides. The nature of fungi, methods of reproduction, manner of attack and control were dealt with. Dr. Gussow was satisfied that fruit men must give more attention to clean culture, if disease was to be controlled. This was equally important with fungi as with insect pests. Another point which should receive more attention was the selection of resistant varieties. If twenty men are exposed to contagion often only twenty per-cent. become diseased. With plants we have like conditions. In many cases they are somewhat immune, and with ordinary

THE CANADIAN NURSERY CO. LIMITED
Hardy Northern Grown Nursery Stock
10 PHILLIPS PLACE, MONTREAL

Ornamental Trees
Deciduous Shrubs
Evergreen Shrubs
Fruit Trees
Strawberries and Small Fruits
Vines and Hedges
Hardy Roses
Conifers, etc., etc.

Only those Plants sufficiently robust for our northern climate are grown. All Stock guaranteed. Full directions given.

NURSERIES: POINTE CLAIRE, 14 MILES FROM MONTREAL
On main line of Grand Trunk and Canadian Pacific Railways

Over Fifty Trains daily ensure unsurpassed shipping facilities. Private siding. Plans and estimates submitted for Gardens, Grounds and Landscapes. Catalogue on Application

A Few Reliable Salesmen Wanted

SPECIAL GLASS
FOR GREENHOUSES

Conservatories of The Dale Estate, Brampton, Ont.
Glass supplied by our Toronto Branch

GOOD QUALITY, FLAT, EVEN THICKNESS, AND WELL CUT

We make a specialty of supplying Glass for vegetable forcing houses

PILKINGTON BROS.
Limited
Toronto, Montreal, Winnipeg, Vancouver

Mention The Canadian Horticulturist when writing

care they escape disease. As with man, strength and resistance go together.

SPRAY MIXTURES

Mr. L. Caesar, of the O.A.C., Guelph, was very much at home when speaking of spray mixtures and their applications. He said lime sulphur is destined to take the place of bordeaux, although bordeaux is probably the better fungicide, but when we consider that lime sulphur has an insecticidal value as well, its field becomes large. The formula as now used by him is twenty pounds of lime, one hundred pounds of sulphur and forty gallons of water. It is essential that the lime should be ninety per cent. pure. This concentrated spray is diluted with water and applied at a specific gravity of one and three-hundredths per cent. before buds burst, one and nine-thousandths per cent. before blossoms burst and one and eight-thousandths per cent. just after blossoms fall. He recommended nothing new in the way of making or applying same. For grapes and potatoes the bordeaux mixture is still much superior to lime sulphur. The only reliable arsenical to use with lime sulphur is arsenate of lead, while a number of poisons may be used with the bordeaux mixture.

The morning of Wednesday was given over to business. An interesting feature was the report of Mr. Richardson, superintendent of the demonstration fruit farms at Covey Hill and Abbotsford. These demonstration fruit farms were a new venture. The work had been undertaken and fostered by the cooperative societies in conjunction with the Pomological Society of Quebec. The report of the first year of the work done, and the results achieved were encouraging. The fruit conference to be held at Ottawa also received a share of attention.

RESOLUTIONS

After dinner a number of important resolutions were discussed and carried, viz.:

First. Resolved—That a committee of the Association be appointed to procure the latest information with regard to the best style of packing fruit, and that they report to the directors of the Association for publication.

Second. That the Ontario Government be requested to provide a short course for fruit inspectors at the O.A.C., Guelph, and that they grant certificates to each successful student. Also that schools to instruct apple packers be provided in the counties.

Third. That the Dominion government be requested to send a capable man to Europe to study cooperation and market conditions and report to the government.

Fourth. That the Dominion government have daily market prices of fruit collected from their agents in the Old Country and published in the daily papers in all provinces of the Dominion.

Fifth. That the Dominion government be requested to have forms issued to basket manufacturers, so as to insure uniform size of fruit basket.

Sixth. That the Association convey congratulations to Hon. R. L. Borden on his

The Extremes Agree

I appreciate THE CANADIAN HORTICULTURIST very much.—J. K. Ross, Charlottetown, P.E.I.

Send me THE CANADIAN HORTICULTURIST for another year. I cannot do without it.—D. W. Spice, Vernon, B.C.

Douglas Gardens

Oakville, Ontario

Wishes all the readers of The Canadian Horticulturist The Compliments of the Season

OUR

Spring Planting List

Will be issued on 1st February next. It will describe and offer a goodly list of

Bedding Plants:

China Asters, Salvia, Scabiosa, Stocks, Etc.

Herbaceous Perennials:

Shasta Daisies, Delphiniums, Hemerocallis, Kniphofia, Pentstemons, Spiraeas, Etc.

Summer-Flowering Bulbs:

Gladiolus, Ismene

Mailed free to all on our mailing list and to others who send their names and addresses

JOHN CAVERS

PEDIGREED CHERRIES

THIS is one of our Specialties. We have a large stock for spring sales and they are the finest we ever offered. Our Sour Cherries are budded on Mahaleb Seedlings, our Sweets on Mazzard, insuring long life and thrifty growth. The stock we offer is all bred from Selected Bearing Trees, and we guarantee it true to name and of superior type. We can offer attractive prices on all varieties.

AUBURN NURSERIES

QUEENSTON, ONT.

GOOD CROPS

ARE OBTAINED BY USING

THE BEST MANURE

AS SUPPLIED TO NURSERIES, FRUIT GROWERS AND GARDENERS

SURE GROWTH COMPOST

makes poor land fertile, and keeps fertile land most productive. Supplied by

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Mention The Canadian Horticulturist when writing

Nursery Stock at First Cost

We employ no agents. Our goods are sold by mail only, so we are able to give you high class nursery stock at very reasonable prices.

Our stock is carefully grown, regularly inspected, and guaranteed healthy, clean, true to name, and first class in every particular.

Our reliability is vouched for by the fact that we have been growing and selling nursery stock at our Central Nurseries for **30 years,** and have thousands of pleased customers all over the country. Some of our earliest customers still buy from us. They have had a chance to see what our trees would do, and **know** that they are good.

As regards prices, they are given in **our catalogue,** which is free for the asking. **Send for it.**

Our stock consists of FRUIT, SHADE, ORNAMENTAL and EVERGREEN TREES, SHRUBS, GRAPE VINES, ROSES, ASPARAGUS ROOTS, **EVERYTHING.** It will pay you to order now while the assortment is complete.

OUR CUSTOMERS TALK BACK

Toronto, May 26, 1911.
A. G. Hull & Son, Central Nurseries,
St. Catharines.

Dear Sirs,—I was over to my place on the 24th and saw the trees. I am well pleased. They are a nice lot. Mr. Jamison spoke very highly of them, also of the civility and consideration received from you. It is a pleasure dealing with nice people. I trust they will be a source of bringing you business.—W. B. G.

Roxham, Que., May 24, 1911.

Dear Sirs,—I received the trees you shipped me all right. I must say these are the best trees I ever saw. I am well pleased with them, only sorry that I didn't send for more. I am pleased they turned out so well. The apple tree agents in this place said they wouldn't be any good. Thank you for sending such a nice lot.—F. S.

Woodstock, Ont., May 12, 1911.
Messrs. A. G. Hull & Son, Central Nurseries,
St. Catharines.

Dear Sirs,—I beg to thank you for your kind attention to my order and for the quality of the goods you shipped me. My man, who is a thorough gardener and nursery man says that the stock is exceptionally good, and he made me promise to write you and say so.

The prices charged by you are very reasonable. If I can ever be of any service to you in recommending your goods, do not hesitate to command me.—J. R. S.

THE CENTRAL NURSERIES—A. G. HULL & SON—ST. CATHARINES, ONT.
Proprietors

The ONTARIO FRUIT SPRAYER
BUILT FOR BUSINESS

Fig. 73 No. 1 A, 1912 Model

This cut illustrates our **1912 MODEL FRUIT SPRAYER,** a marvel of simplicity, strength and durability, 2½ H. P. engine, water cooled and always ready; can be quickly cut off from pump jack and used for other purposes. This outfit represents all that first-class machinery, material and skill can produce at a moderate price. Write for detailed description and price. We manufacture a full line of Apple Evaporating Machinery.

Installing Power Evaporators a Specialty

FRUIT MACHINERY CO. - Ingersoll, Ont.

judgment in selecting Hon. Martin Burrell as Minister of Agriculture; also that congratulations be forwarded to Hon. Martin Burrell, whose appointment was in every way satisfactory to the fruit growers.

NEW AND LITTLE KNOWN FRUITS

Mr. W. T. Macoun, Dominion Horticulturist, after referring to the boxed fruit on exhibition, and pointing out why prizes had been awarded in the several classes, spoke at some length on new and little known fruits. Two classes of men were referred to; those who accept everything that is new, and those who condemn everything because they are new. Both classes need moderation. The greater part of the new fruits are valueless; but, on the other hand, the growers should constantly be on the lookout for superior fruits which are occasionally offered.

F. E. Buck of the Central Experimental Farm, Ottawa, spoke on flowers in general and their relation to the national life. He was of the opinion that the commercial spirit tended to rob life of its poetry; and that a knowledge of how to plant, what to plant and when to plant was the great panacea which would solve this social problem.

W. H. Dempsey, Trenton, Ont., spoke of soil treatment in the apple orchard. He referred to the three systems of cultivation, viz.: Sod mulch, continuous cultivation and the cover crop. All these methods had something in their favor, but for Quebec conditions, cultivation until midsummer followed by a cover crop was the system advocated, and the system which has given entire satisfaction.

THE MINISTER SPOKE

The great feature of the evening session was the address by the Hon. Martin Burrell, Minister of Agriculture, Ottawa. His address was pleasing, instructive and enjoyed by all. He was glad to be numbered among the horticulturists, and the members of the Pomological Society were not slow in reminding him that they too were pleased. He referred to his native province, British Columbia, and by comparing east with west —their conditions, successes, failures—drew lessons destined to uplift the fruit industry in the province of Quebec. The Deputy Minister of Agriculture for Quebec followed. He was willing and anxious, as always, to help the fruit men. The excellent music rendered by the orchestra of Macdonald College, under the auspices of the horticultural club, was not so sweet to him as the chord struck by the Hon. Martin Burrell, when he said: "Cooperation is the salvation of the farming industry of the Dominion." In this he most heartily concurred.

The Rev. Father Leopold, La Trappe, then delivered a most instructive address on "Fruit Culture in France." He had spent the summer in the old land studying nursery practice first hand. In most faultless style he compared fruit growing in France with the same in America. Intensive in France; commercial in America, is the striking difference. The commercial spirit has allowed the American to invade the European market and to hold it against all competitors, but when we consider "high-pressure gardening" France easily leads.

THE FRUIT EXHIBIT

The exhibition of fruit was conceded to be much the best of any similar exhibit held in the province. The Fameuse and McIntosh Red, as usual, were much in evidence. This is as it should be, for Quebec leads the world in the production of these varieties in color and quality. This was strikingly brought out by a comparative exhibit in which Mr. R. W. Shepherd, of Como, displayed some

Grasselli Spray Products

LIME SULPHUR SOLUTION
ARSENATE OF LEAD PASTE

We wish to announce to Canadian Fruit Growers that we are preparing to manufacture Grasselli Lime Sulphur Solution at our works, Hamilton, Ontario, and will be able to make deliveries by **February 1st, 1912**

Grasselli Lime Sulphur Solution is a high grade, clear cherry color solution containing maximum amount of sulphur actually in solution in the form of Calcium Polysulphides.

Shipments will be made in both carloads and less carloads from our Hamilton Works, and less carloads from our Toronto Warehouse.

Grasselli Arsenate of Lead Paste

We will ship the well known Grasselli Arsenate of Lead Paste from both Hamilton and Toronto. The quality of this product is so well known that it needs no introduction to users in the larger fruit growing sections of Ontario but to those who may not have followed closely the strides that have been made in lead making, wish to state that it is an evenly balanced product, containing not less than fifteen per centum Arsenic Oxide (Poison), less than one half of one percentum Soluble Arsenic, and is in good mechanical and physical condition.

It is packed in the best of packages

Write for Prices and Name of Nearest Distributor.

THE GRASSELLI CHEMICAL CO., LIMITED

Works and Main Office:
HAMILTON, ONT.

Warehouse and Office:
131 Eastern Ave.
TORONTO, ONT.

SPRAMOTOR SAVES TREES

Two carloads of the Traction Spramators were shipped to Waterdown and Burlington last year.

The farmers there prefer them to all others for general purposes.

They are well adapted to spraying fruit trees of any size, and by a simple change of spray pipes, are equally suitable for vineyards, row crops and weed destruction.

The greatest care is taken in their manufacture, as they are most difficult machines to manufacture.

They have all the features of the large power machines, and in addition, have a Nozzle Protector, Patented Nozzle Adjuster, 12 gal. Air Tank and a motor of the largest capacity: yet owing to the control, one nozzle can be used as effectively as 12 (the limit) and yet maintain an equal pressure of from 80 to 200 lbs., or any pressure you desire.

All of the highest grade throughout.

Everything in its construction made in the Spramotor Factory.

HEARD SPRAMOTOR CO.

1388 King Street, London, Canada

Are You Setting Out Your Trees as Economically as Possible and are the Trees when Planted Giving The Best Results Obtainable ?

Let Us Send You FREE OF CHARGE our Pamphlets on the use of

STUMPING POWDERS

USED FOR

Planting Trees
Cultivating and Rejuvenating Orchards
Breaking Hard Pan, Shale and Clay Sub-Soils
Removing Stumps and Boulders
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Write us in regard to arranging
FREE DEMONSTRATION

CANADIAN EXPLOSIVES, Limited
MONTREAL, P. Q.

A BARGAIN

The Canadian Apple Growers' Guide.....$2.00
The Canadian Horticulturist. One Year.. .60
BOTH FOR $2.00 $2.60

This Offer Expires Jan. 31, 1912. Write To-day.

Fameuse from Quebec beside others from the King's gardens in England, and from British Columbia. The Quebec Fameuse were easy winners. This extra color is attributed to the great amount of sun, which this province enjoys. This ruddy hue, the glory of these fruits, has gained for the Fameuse much renown, and has sold many other apples in England as "Made in Canada."

The meetings were the most successful which the association has yet held. Every member went home determined to do better in the future, or as one delegate put it, "To Watch and Spray."—E. M. Straight.

New Brunswick Apple Show

New Brunswick is rapidly coming to the front as an apple growing province, and will have to be reckoned with in the near future as a competitor in supplying apples of good color and high quality. The impression gained, from a knowledge of her people, and the excellent apple show held recently in St. John, N.B., is that the people of that province are thoroughly alive to the possibilities of expansion in apple production, and are setting before themselves squarely the problem of growing and marketing fruit in the most up-to-date manner, and in sufficient quantity, to make this an industry of no small importance to the province.

The New Brunswick Government has given a great impetus to apple growing through making possible such fruit exhibits, thus inspiring confidence in her people as to the possibilities of the province in this direction. New Brunswick has been fortunate in securing a capable horticulturist to assist in development along right lines. Mr. A. G. Turney, Provincial Horticulturist, is clear in his belief that New Brunswick should produce fruit of the best and highest quality and supply it to the consumer in the box package. That such fruit can be produced was amply proven, and that the box is the package best suited for marketing this fruit was demonstrated by the excellent exhibit of five hundred boxes in one display made by the New Brunswick Government at this apple show. These apples were collected from the principal apple-growing sections of the province, and were well grown and well packed.

To bring clearly before the people in a concrete way that good culture is at the very foundation of success in apple growing, demonstration orchard work is being carried on in leading fruit sections of the province. The exhibit from these orchards accompanied by photographs of the work was one of the attractive features. In addition to the box fruit exhibits already mentioned by Carleton County Fruit Growers' Association made a fine exhibit.

The entries in the box class brought together a great number of exhibits showing the ability of growers in the province to put up fruit in this package in the best way. The diagonal pack was adopted principally, and a good tight pack was shown with few exceptions.

The plate display occupied six tables throughout the building, and in it was much close competition. It is evident from this exhibit that the growers understand well what constitutes perfect specimens of a variety.

The collection classes were well filled, and from them one is able to select with reasonable certainty those sorts best suited to the province. The varieties Oldenburg, Wealthy, McIntosh, Fameuse, Bethel, Dudley, Wolf River, King, Golden Russet and Bellflowers, were most in evidence. The box packs were made up of the Dudley, McIntosh, Fameuse, Wolf River, Wealthy, King and Bethel principally.

REX

LIME-SULPHUR SOLUTION

AND

ARSENATE OF LEAD

REX LIME-SULPHUR SOLUTION IS **GUARANTEED** TO BE **CLEAR** ALWAYS: TO CONTAIN NOTHING BUT WATER, LIME AND SULPHUR AND TO HAVE 35% OF LIME AND SULPHUR IN SOLUTION.

REX ARSENATE OF LEAD IS **GUARANTEED** TO CONTAIN 15% OF POISON (ARSENIC PENTOXIDE)

OUR 32 PAGE **"BULLETIN"** OF FRUIT AND VEGETABLE PESTS AND THEIR CURE **FREE** IF YOU WILL WRITE US, GIVING YOUR ACREAGE.

THE NEW CANADIAN INDUSTRY

CANADA **REX** SPRAY CO.

BRIGHTON, ONTARIO

FERTILE-VIRGINIA-FARMS

N&W Ry

$15.00 PER ACRE & UP—EASY PAYMENTS

Productive soil, mild climate, fine water, good roads, close markets, unsurpassed school and social advantages. *Now, while you think of it,* write for the latest issue of "THE SOUTHERN HOMESEEKER," other literature and low excursion rates. Address F. H. LeBAUME, Agr'l Agt., Norfolk & Western Ry., Box 40 40 Roanoke, Va.

YEARLY RAINFALL 45 INCHES

Valuable 64-page

Farm and Garden Handbook FREE!

The Planet Jr 1912 catalogue is an *instructive* handbook of short cuts to best results for farmers and gardeners *everywhere*—not simply a list of implements. It illustrates 55 latest-improved Planet Jr tools, showing many *in actual use.* 64 big, helpful pages. Write for it at once! **Send postal today!**

S L Allen & Co

Box 1106G Philadelphia Pa

No. 11 **Planet Jr Double Wheel Hoe, Cultivator, Plow and Rake** works both sides of plants thoroughly and rapidly at one passage, until crops are 20 inches high. This fine tool has indestructible **steel frame** and steel leaf lifters.

No. 4 **Planet Jr Combined Hill and Drill Seeder, Wheel Hoe, Cultivator, and Plow** sows seed accurately and works quickly, easily, thoroughly. Wonderful all-round garden tool and money-saver.

Write for name of our newest agency.

Some History

about *Typewriters*

Modern and Ancient

CHAPTER 6

YOU can get from us the stenographer you need.

WE maintain, at very considerable expense, the largest employment department in Canada.

LAST year at Toronto alone we filled 5000 positions. Applicants are tested and graded. We know their capabilities. We supply the most efficient worker for the salary the employer will pay.

THE service is absolutely free. It is an invaluable convenience to employers, and a boon to the hundreds of young people who obtain through it their means of livelihood.

AND it is merely one phase of the Underwood Service.

United Typewriter Co. Limited

TORONTO

The apple show was held under the auspices of the New Brunswick Fruit Growers' Association, the Government giving a grant of five hundred dollars toward the show. This made it possible to offer fair prizes, and thus helps to bring together the best fruit and the leading growers of the province. The annual meeting of the society was held at the same time, and addresses were given on timely topics by horticulturists present.

A pleasant feature of the show was the banquet given at the Victoria Hotel, where some two hundred of the fruit growers did honour to the occasion. Leading business men and those holding public positions paid high tribute to the excellent work done by the Department of Agriculture through the untiring efforts of Secretary for Agriculture, W. W. Hubbard, the provincial horticulturist, A. G. Turney, and W. T. Macoun, Dominion Horticulturist. Professor W. S. Blair, Macdonald College, and Professor Shaw, of the Nova Scotia Agriculture College, acted as judges at the show, and delivered addresses at the convention.

The New Assistant in Horticulture

Our readers are hereby introduced to Mr. E. M. Straight, the new assistant professor of horticulture at Macdonald College. Mr. Straight is a New Brunswick man. He was born at Cambridge, Queen's county, where he received his education. After teaching in the public schools for a number of years, he was engaged in intensive market gardening, until he decided on an agricultural college training. This he secured at Truro, the Agricultural College, Guelph, and at Macdonald, Que. It may be added that he is one of Macdonald's first graduates. Mr. Straight will contribute a number of articles to The Canadian Horticulturist during the coming year.

Canadian Apples in China

The Canadian Trade Commissioner at Shanghai writes to the Department of Trade and Commerce at Ottawa concerning his efforts to promote trade in apples between Canada and China. Many merchants there prefer the Canadian product, but find the prices too high. One particular firm desired from five hundred and fifty to one thousand cases to be delivered from Vancouver at Shanghai by December fifth, but found that the Canadian firm with whom they communicated quoted two dollars and fifty cents gold per case of forty-one pounds, which was forty-one cents more than the United States firms were quoting. The Shanghai market can easily absorb one thousand six hundred cases this season.

A trial shipment of Canadian apples last year met with considerable success. Commissioner Harris states that if Canadian apples can be quoted for one dollar and eighty cents, they can easily compete with those from the United States, since they are locally preferred.

Many thanks for the fountain pen sent me as a premium for securing five newsubscriptions to The Canadian Horticulturist. I am more than delighted with it. It is worth ten times the labor to secure such a premium.—H. Laycock, St. Thomas, Ont.

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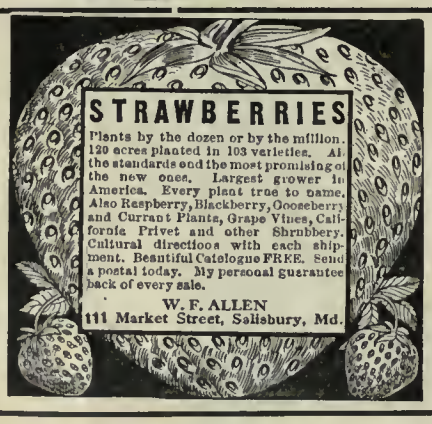

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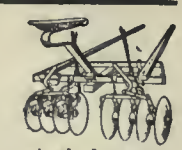

You can cultivate between berry bushes when the Bissell Garden Disc Harrow is closed up, or under fruit trees with wings added. Adjustable—for single horse, or light two horse harrow. Low or high seat. Reversible—In-Throw to Out Throw. Remember, no harrow is genuine without Bissell name stamped on it. Ask local dealer about the Bissell or write Dept. N for Catalog.

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The Bissell GARDEN HARROW

See advertisement of Bissell Orchard Disc, page X.

Dominion Fruit Conference

THE CANADIAN HORTICULTURIST has not received a program for the Dominion Fruit Conference that it is expected will be held in Ottawa, February 20-22. From a British Columbia paper, however, we see that it is expected that Mr. W. H. Bunting, of St. Catharines, Ont., who has been visiting the fruit districts of Canada and the Pacific coast states on behalf of the Dominion government, will give an address at the conference. His address will be followed by a full report published as a bulletin by the Federal government.

Other features will be an address by W. T. Macoun, the Dominion Horticulturist, on "New Varieties of Fruit," a paper by Alexander McNeil, Chief of the Fruit Division, on "Cooperation in Fruit Marketing," and also, possibly, a paper by J. A. Ruddick, the commissioner in charge, on the subject of cold storage in its applications to the fruit industry.

An interesting feature will be an exhibit of fruit from the various producing districts of Canada, which will be represented by one box each of the twenty or thirty varieties most commonly produced.

Arrangements have already been made for the collection of the requisite fruit in British Columbia. Fruit is being collected not only from the provinces of Canada, but from Oregon, Washington, Virginia, New York, etc. The comparisons that will be made will be of much value to the delegates.

Extracts will be made from the census returns, to show the progress and size of the fruit industry in the various provinces and in the Dominion as a whole. Short addresses will be given by the delegates, indicating briefly the progress being made in their special districts.

A National Apple Show

Two news despatches that have reached THE CANADIAN HORTICULTURIST give reason to believe that Eastern Canada may have a national apple show next fall after all, and that it will be held either in Toronto or Montreal, and be backed by the Dominion Government. The first despatch was received from Spokane, Wash., and was in part as follows:

William H. Bunting, of St. Catharines, Ont., official representative of the Dominion Department of Agriculture, who is making a tour of the Canadian and American northwest, said in the course of an interview in Spokane that he is visiting the various fruit districts in this part of the country to gather data and other information for use in the event it is decided to hold a national apple show in Canada next fall. It is likely that Toronto will be the exhibition city.

"Growers in all parts of Canada, as well as in the United States, will be invited to compete for substantial prizes and handsome trophies," Mr. Bunting said, "and we expect to have an exposition which will attract many from the so-called Spokane country and other parts of the north-western states. We shall have a building of sufficiently large dimensions to accommodate from thirty to thirty-five cars of apples for exhibition purposes, and afford every facility for the display of fruit."

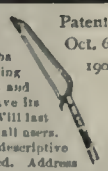
MONTREAL ACTIVE

The second despatch was from Montreal, and appeared in a leading British Columbia daily paper. It was as follows:

"Montreal will, next year, probably be the scene of a national fruit exhibition on the same big scale as marked the National Apple show at Vancouver a couple of years ago. It is proposed that an exhibition of what is regarded as Canada's national fruit,

PRUNING SAW

Patented Oct. 6th 1908



Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address

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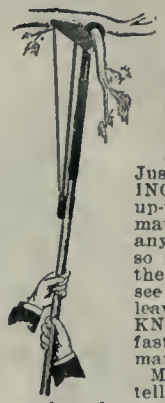

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Tree Trimming is a science and the man intelligent enough to do this work properly is too good a man to have his arms pulled off, his back broken or his head smashed by a fall when all this can be avoided. HOW? Just by using the KANSAS PRUNING KNIFE, improved, the most up-to-date knife made. It is automatic, no levers to work by hand, any length of handle can be used so all the work can be done from the ground, where the operator can see what to take out and what to leave. The KANSAS PRUNING KNIFE does heavy work and does it fast. It is made of the very finest material and made to last.

May we send you our circulars telling more about this knife and also about our HAPPY THOUGHT KNIFE and what owners say about them.

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Strawberry Plants
FOR SALE

We have a fine lot of plants for spring delivery. Best varieties for home, garden and commercial growers. List will be ready early in January. Send for it now.

Place your order early as PLANTS ARE SCARCE

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faithfully reproduce the selected grains, vegetables and flowers from which they were grown. They are clean, vigorous and healthy—sure to grow big crops under all reasonable conditions. By doing this for over forty years they have earned the name "Reliable". 15

Get Ewing's Reliable Seeds from your dealer, or write for our handsome illustrated catalogue and buy from us direct.

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3 FEEDS FOR ONE CENT

This is all it costs you to keep your stock in prime condition with the world's most famous animal tonic—

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Every cent invested in this wonderful health-giver, brings back dollars in strong, healthy horses, cows, sheep and hogs.

Careful tests show that 4 quarts of oats and the regular feed of INTERNATIONAL STOCK FOOD will keep horses in better condition than FIVE quarts of oats without it.

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Nothing like INTERNATIONAL STOCK FOOD to fatten animals for market. Your hogs need it. Ask your dealer for it.

We have a copy of our $3,000 Stock Book for you. Send us your name and address, and tell us the number of head of stock you own.

TESTIMONIAL

Hayfield Sta., Man., Nov. 15, 1911.
International Stock Food Co. Ltd.
Toronto, Ont.

Dear Sirs.—I want to say that your Stock Food is all right. I have had more good from its use than any other kind I ever used, and do not care to start winter feeding without it. Please ship as soon as you can to Carroll. Yours very truly (signed) JOHN ROGERS

INTERNATIONAL STOCK FOOD CO. Limited
TORONTO ONTARIO

63

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Over half this land is in bearing apple orchard. A good acreage under small fruits, and a young pear orchard adds to the income, which exceeds three thousand per annum.

The fruit from this place has competed successfully with Ontario's leading fruit growers at Toronto Exhibition and the Fruit Show in St. Lawrence Arena.

The barns and storehouse have been recently built. The dwelling is a nine-roomed modern frame structure with a full-sized basement. Nice spruce trees about the lawn put the finishing touches on this attractive home. It has telephone connection and is within a few minutes' walk of store and Post Office. Convenient to electric car line and railway depot. It is one of the select properties of its kind in Ontario.

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MEANS FENCE PROTECTION

Peerless Wire Fence does not serve only as a mere boundary line for your farm and pastures but gives real fence service as a permanent barrier to trespassing and wandering of stock.

You Should Fence Your Land With PEERLESS

We use high grade fence wire well galvanized. The joints are united by the non-slippable Peerless Lock, making a fence that will stand up against the most severe and sudden shocks without damage. The horizontal wires are all crimped, making ample protection for contraction and expansion, keeping the fence always tight even under extreme variations of temperature.

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We also manufacture a wonderful line of poultry fencing and farm gates. Agencies almost everywhere. Agents wanted in all unassigned territory.

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Lumbersole Boots protect your feet from severest cold and worst damp. We guarantee it absolutely. Your money back if you want it, but you won't. Lumbersoles have specially treated *wood* soles, 3-4 inch thick. This sole keeps the natural warmth of the foot *in the boot* and keeps cold *out*. Folks out West wear them in 50 below zero and still have warm feet. Thousands of pairs sold annually.

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Men's Best Quality, 2-Buckle Styles. Sizes 6-12	$2.00
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The SPRAMOTOR rids field crops, vineyards and trees of all pests. Guaranteed pressure of 125 pounds with 12 nozzles working. Sprays potatoes perfectly, tops and vines. Fitted for one or two horses and also made to be operated by hand.

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We publish a complete treatise on crop diseases. Tells facts all growers should know. Ask us for a copy to-day.

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the apple, shall be held here next November, where there will be exhibits from all the apple growing districts of Canada. It is expected that such an exhibition will prove of great advantage to the country, since it will draw buyers from Europe, as well as from the United States.

"Committees have been appointed to find how much support may be looked for from the Dominion and provincial governments as well as from the railway and steamship companies. It is pointed out that the Vancouver Apple exhibition gave forty-five thousand dollars in prizes and it was thought that Montreal should be able to do even better than this. Other expenses in connection with the exhibition will probably bring the expense up to about sixty thousand dollars so that it will be no small affair to undertake."

BE ON GUARD

While it is possible that the proposal is atill only very much under consideration, and that it may not materialize, still eastern apple growers will do well to be on their guard so that there will be no danger of their being caught napping. Were the show held in Montreal, Nova Scotia and New Brunswick might be expected to send large exhibits. We presume that this matter will be given consideration at the Dominion fruit conference this winter.

Nova Scotia

The shipping of apples from Nova Scotia so far this season aggregates over 921,702 barrels, 1,861 half-barrels and 9,907 boxes. This is estimated to be only half the crop. Of this quantity 790,128 barrels have been forwarded through the port of Halifax, 21,574 through the Bay of Fundy, and 100,000 barrels by rail to western Canada. The Halifax shipments were: London, 332,333 barrels; Liverpool, 151,323 barrels; Glasgow, 134,281 barrels; Hamburg, 133,673 barrels; Bristol, 13,430 barrels; Newfoundland, 6,736 barrels; South Africa, 2,675 barrels; Manchester, 3,701 barrels; West Indies, 2,976 barrels; Newfoundland (by Red Cross Line), 9,000 barrels; total, 970,128 barrels. From Annapolis by steamer to Hull, 17,574 barrels; to St. John by schooners (estimated), 14,000 barrels.

British Columbia

The Department of Agriculture, in accordance with its policy of education, has decided to continue the fruit packing schools as inaugurated two years ago and extended last winter. The five packing schools with an attendance of one hundred and twenty pupils in the spring of 1910, grew to a total of thirty schools with a total attendance of three hundred and eighty-five pupils in the spring of 1911. These schools proved very popular.

Mr. Thos. Cunningham, provincial inspector of fruit pests, announces that all fruit entering the province of British Columbia in future will have to pass a most rigid inspection at the hands of the provincial fruit inspectors, whether the fruit be from across the line or shipped in from the east. According to investigations made by Mr. Cunningham, evidence of the much dreaded codlin moth, from which the province is said to be free, has been found in shipments of apples received from the state of Washington and also in some received from eastern Canada. Mr. Cunningham recently inspected two carloads of Ontario apples and condemned them for being affected by codlin moth. He also condemned two consignments of apples received from the state of Washington for the same reason. The government has twenty-one inspecting stations at points throughout the province and instructions have been issued

The Canadian Horticulturist

Vol. XXXV FEBRUARY, 1912 No. 2

Spraying Suggestions for the Apple Grower

S. C. Parker, Secy., Nova Scotia Fruit Growers' Association, Berwick, N.S.

THE necessity of spraying with fungicides and insecticides to insure a crop of marketable apples is almost universally conceded by growers. Occasionally one is found who says he does not spray and yet his apples are as good as his neighbors'; with such as he it is of no use to argue, one can only say "Ephraim is joined to his idols, let him alone."

Admitting that spraying is a necessity to the progressive fruit grower, he is at once compelled to decide on his "poison." Two year ago when the writer of this article was called on to discuss sprays, the well-tried bordeaux mixture was the first and only thing mentioned. Learned discussions as to the merit of four-four-forty as compared with three-three-thirty could be heard in every gathering of apple men. It is often said that the farmer is slow to change his methods. With the up-to-date orchardist such is not the case. Convince him of improved methods and no man will seize the opportunity more quickly.

In the spring of 1910, ninety-five per cent. of the spray used in Nova Scotia was Bordeaux; in 1911 the same per cent. of the growers used lime-sulphur. Why this revolution in methods? Bordeaux had been fairly successful in controlling the fungus, but the tendency to russetting under certain conditions, and bordeaux injury to the foliage and fruit was often very obvious. In 1910 a few careful growers used lime-sulphur, and the results were so marked that everybody went the same way in 1911. Most of the growers used the commercial brands. Two lime-sulphur plants manufactured several thousand barrels and supplied the trade at a fair price. Small growers who want only a few gallons had better buy than to bother with boiling the mixture. However, from practical experience we found no difficulty in making an article just as good as any commercial product. A boiling plant can be fitted up at a cost of a very few dollars, and a good stock solution that will test twenty-eight degrees to thirty degrees Beaume, can be prepared in a few hours. The commercial product costs us from twenty to twenty-five cents per gallon, while the same quality made in a small way can be turned out by the growers at less than half that price.

Some manufacturers will try to convince the farmer that boiling lime-sulphur is a very intricate process, and that the amateur will meet all kinds of difficulties. This is hardly the case, as any practical man can prepare a couple of hundred gallons of stock solution in a day, and save fifteen or twenty dollars for his time and trouble.

GREAT IMPROVEMENTS

Nothing more strongly marks the progress of spraying than the improvement of spraying outfits. About fifteen years ago the writer bought and used his first spray pump. This was purchased on the recommendation of Prof. John Craig, then the Horticulturist at Ottawa. The pump was of cast iron, no brass fittings, had ten feet of hose, with an iron nozzle fit for a small steam engine. Extension rods were unknown, and we used a rake handle tied to the nozzle to get the elevation. One season's experience with this crude outfit settled the question, and fungus and bugs had possession for the next few years. Then we tried several makes of hand pumps, and found with improved nozzles and bamboo extension rods that satisfactory work could be done, and fungus controlled.

Five years since, we bought a power outfit, used by the Dominion Department of Agriculture in the Annapolis Valley, for demonstration spraying. We supposed we were getting an outfit, tried and proved, as the best obtainable. Fortunately for us, there was a good wagon under the outfit and a good tank, as this is all that we got for our money save vexation and annoyance. The first season saw the pump relegated to the scrap heap; the second, the engine followed suit. People who will build a power pump with two horizontal cylinders on top of the tank, hitch it up to an engine with a chain gear, and expect it to do business, are not practical and should not be in the business.

After this unsatisfactory experience we got together the outfit shown in the illustration. When spraying in large orchards we use three

A Power Sprayer at Work in the Niagara District, Near Burlington, Ont.
—Photo courtesy Niagara Brand Spray Co., Burlington

A Power Sprayer as Used in Mr. S. C. Parker's Orchard, Berwick, N. S.

lines of hose, two men on the ground and one man on the tank. The men on the ground use hose thirty or forty feet long, allowing them to walk around an ordinary tree, covering all sides, while the man on top of the tank covers the top of the tree. We have practically discarded Vermorel nozzles for those of the Friend type. The latter use more liquid than the Vermorel, but do not clog; and time is worth more than a little extra home-boiled lime-sulphur. A good pair of oxen makes a splendid team for a spraying outfit. Many of our large orchardists are using them, as it leaves the horse team free for ordinary farm work.

To ensure good apples we must spray; and spraying with the appliances of to-day is to the spraying of fifteen years ago as the reaper of to-day is to the sickle of our fathers. About one hundred and twenty-five gasoline spraying outfits were bought by Annapolis Valley orchardists in the spring of 1911. Probably as many more will come in for 1912. Spraying must always be a costly and arduous work; but with the improved appliances and good fungicides it is being freed from much of its terrors.

Peach Diseases in Ontario

Prof. L. Caesar, O. A. C., Guelph, Ont.

Brown Rot (Sclerotinia fructigena) (Pers.) Schroet, is the same disease that is so common on plums and cherries, especially sweet cherries, and that frequently causes a large percentage of these fruits to rot. Fortunately it is not so destructive as a rule in our province to peaches as to cherries and plums or as it is to peaches in some parts of the United States, where it has been known to destroy as high as forty per cent. of the whole crop in a year that was very favorable for the disease. Nevertheless, we sometimes lose a good many peaches from this rot. Triumphs and a few other varieties are much more subject to the disease than Elbertas and some of our other profitable kinds.

Not only is the fruit attacked, but also the twigs and small branches on which diseased fruit is borne. The disease in such cases seems usually to work its way down from the diseased fruit into the twig or branch and gradually girdle it. This, of course, causes the part above, with all its leaves, to die. Some seasons the blossoms are also attacked. I have noticed this to be quite common in the case of sweet cherries.

Like most diseases there are certain conditions that favor the development of Brown Rot. The chief of these are damp, warm weather, lack of sunlight and of good air circulation, the presence of old mummied fruit on the trees, two or more fruits touching one another on the tree, and injuries from hail or biting insects, like the Plum Curculio.

MEANS OF CONTROL

The conditions favoring the disease give us hints as to how we may help to ward it off: First, give the trees plenty of sunlight and good air circulation by removing unnecessary windbreaks and by judicious pruning; second, knock all old mummied peaches and plums off the trees in the fall and either gather and burn them or plough them under early in the spring; third, thin the peaches so that no two will be touching one another; fourth, spray with lime-sulphur for Leaf Curl and this will protect the blossoms from attack; fifth, if the Curculio is troublesome, spray with two or three pounds of Arsenate of Lead to forty gallons of water soon after the fruit is set, and remove all rubbish and thickets from around the fence corners, as the beetles winter in such rubbish. Two or three pounds of freshly-slaked lime may be added to each barrel of the spray mixture as a safeguard against burning. Sixth, spray with self-boiled lime-sulphur about a month or five weeks before the fruit is ripe. Bordeaux or commercial lime-sulphur is likely to injure the foliage. For directions for making the self-boiled lime-sulphur, see our spray calendar or lime-sulphur bulletin.

CANKERS AND GUMMING OF PEACH TREES

In certain localities in the Niagara district, especially at Queenston, Niagara-on-the-Lake, St. Catharines, and in one or two orchards at Winona, it is a common thing to find large black gum-covered cankers, chiefly on the upper side of large branches. These cankers do not heal over, but continue to widen out and enlarge until finally the whole branch dies. The disease is not confined to Ontario, but is quite common in Michigan and in parts of New York State and probably in other states as well.

In Ontario, so far as I know, it was not very troublesome until the spring of 1908, and in that and the next year there was a regular epidemic of it in the above mentioned districts. Since then there seems to have been much fewer new cases, but the old ones are still active and are causing the loss of many branches in otherwise vigorous orchards. The cause of these gummy areas is very doubtful. There is apparently no bacteria present.

At first, as the result of a number of inoculations which showed that the Brown Rot fungus would, if inserted through the bark, produce very similar gum masses, I was inclined to think that this must be the cause of the disease,

Fruit Attacked by Brown Rot

The same disease attacks peaches, plums and cherries (After Duggar).

Canker on Peach Branches
This trouble is due to the so-called Gumiossis disease.

but further study and failure to get any fungus whatever in the wood beneath fresh gum masses has made me believe that while Brown Rot may have something to do with preventing the healing of some of these cankers, yet it does not account for the origin of all of them. There is also the difficulty of explaining why some orchards such as those at Grimsby should be almost totally free from the disease, though Brown Rot is frequently quite as destructive or even more so there than in the diseased orchards. It is also hard to explain why in many orchards without any change in methods of spraying there has been almost no new cases. A good instance of this is the large orchard of A. Onslow, near Niagara-on-the-Lake. It is quite possible that very unfavorable weather conditions interfering with the cells of the plants performing their proper function may be the real cause.

Much gumming of trees is, of course, frequently caused by small black beetles, known as Shot-hole Borers, but it is easy to determine whether these are the offenders by removing the gum masses and seeing whether there is a small hole through the bark made by the beetles. Sometimes the fungus Valsa leucostoma will produce gumming, but, so far as I can see, it seems usually to be a secondary cause and to enter at some dead area or wound and then gradually kill the living tissues around this area.

WHAT TO DO

With our present lack of knowledge as to the cause of the gumming of peach trees it is difficult to recommend any rational method of treatment. It would be wise, however, where a canker threatens to destroy a large and valuable limb to cut out all the dead tissues up to the perfectly healthy bark, disinfect the wound with formalin, one part diluted to about five with water, or with corrosive sublimate one part to one thousand parts of water (this is a deadly poison), and cover it over well with white lead paint free from turpentine. A second painting later in the season will usually be necessary.

Best Varieties of Small Fruits

Grant S. Peart, Burlington, Ont.

Soil adaptation is an important point to consider when selecting varieties. of small fruits for cultivation. Certain varieties seem to do better on heavier soils than lighter soils and vice versa. The Williams strawberry, according to my experience, gives better results on a rich soil inclined to be heavier than that recommended for strawberries by some growers. On the other hand Bederwood seems to produce better berries on a well manured, lighter soil. In red currant culture the Fay seems to require a heavier and richer soil than the cherry, while among black varieties the Naples needs a richer and stronger soil than the Lees. The same relationship exists between the Marlboro and Cuthbert raspberries. The former must be fed more liberally with manure to get the best results. The foregoing includes a few of the many examples which may be brought forward as convincing evidence that soil adaptation is an important consideration when setting out a plantation of small fruits.

MARKET REQUIREMENTS

What the markets demand in small fruits in Ontario is of little importance to the grower unless he is producing strawberries for the canning factory. Although different qualities are represented among varieties, ordinarily speaking, no discrimination is made by the consumer as to quality. Berries are berries, and like prices are realized on all varieties, with the exception of gooseberries (the English varieties generally command higher prices than American sorts). It is needless to say that white and purple raspberries, white currants, juneberries, and other extraordinary kinds of bush fruits so far have proven to be unsuccessful in a commercial way.

SELECT VIGOROUS STOCK

Very often after a variety has been grown for many years in a certain locality and no new stock of that variety is brought into the locality, the plants or canes become gradually weakened from year to year until that particular strain is unprofitable to grow. Thus the advisability of selecting vigorous stock. An example of this trouble is found in the Burlington district and others, where the Marlboro and Cuthbert raspberries do not yield as profitably or grow as vigorously as they did ten years ago. In fact, in some plantations they are now being entirely supplemented with the Herbert variety. The Herbert is practically a new berry in the district and promises well, but the writer believes that it is not as valuable a variety as the Cuthbert to the grower.

The culture of the Williams strawberry also has been given up by many Burlington growers because its stock has lost vigor. During the past few years it has been almost impossible to obtain good rows with this variety. To use a common phrase, the plants will not "run" sufficiently, and thus a ragged

Spraying With a Spramotor Power Machine in an Ontario Orchard.

Combatting Insect Pests in California by Fumigating.—No. 1

This shows a tent being moved from one tree to another. These are navel trees about fifteen feet high. —Photo courtesy E. H. Wartman.

row results. Its place is being largely taken by the Gibson or Parson's Beauty.

RED CURRANTS

The Cherry and Fay are the leading varieties; both are very productive. The former does better on the lighter soil than the Fay.

GOOSEBERRIES

American—Pearl and Downing.

English—White Smith and Industry.

The English varieties are subject to mildew, but it can be controlled quite well since the lime-sulphur wash came into common use.

British Columbia Methods

Low-heading of apple trees is practiced generally in the interior valleys of British Columbia, those in the dry belt, at any rate. Clear warm days and sharp night frosts, dropping from snow-clad mountains, are the conditions frequently experienced for a few weeks previous to the trees starting growth—ideal conditions for sunscalding. Low heads have advantages besides protecting the trunks from sunscald; easy picking, pruning and spraying being the greatest. It is easier to make good low-headed trees when one begins with one-year-old stock which is planted by many growers in that section.

The fact that British Columbian apples run (sometimes outrun) those of Washington and Oregon very hard in the matter of bright coloring may be accounted for by that province being so situated geographically that they get more hours of sunshine during the summer season. McIntosh Red and Jonathan are the most largely planted kinds in the interior. Northern Spy, though probably never planted as much as it deserves because of its late bearing habit, does splendidly. These varieties color so gorgeously under the summer sun at latitudes 50 and 51 that they will always be quick sellers.

Pruning Peach Trees

Will you please describe how to trim back three or four year old peach trees in the fall, and also how to trim one-year-old trees. In setting out a new peach orchard how far is the standard distance generally allowed between the trees?—J. A. McK., Ontario.

The first few years is a critical period in the life of the young tree, and too much care cannot be given to the pruning and shaping of the peach tree. When the tree is set it should be pruned to whip and cut back to fifteen or eighteen inches from the ground. The roots require very little pruning except to cut off broken or ragged pieces. It is a good plan during June in the first year to go over the young trees and remove all except six or seven shoots coming out from twelve to eighteen inches above the ground.

The following spring the real forming of the head of the tree is done. Three or four well-placed shoots on the whip should be left. These should be evenly placed about the whip and not too close together and no two forming a crotch, which may later give trouble. When these have been selected and the others removed the remaining ones should be cut back nearly two-thirds. This is severe pruning, but will pay in the end, as the tree will make even stronger growth on account of the severe pruning.

The second year's growth needs to be almost as severely dealt with. At this time it is necessary to see that the head is given proper balance so that the tree will be compact and somewhat spreading without being dense or too straight up. There is usually danger in leaving too much wood of this year's growth by at least one-third to one-half.

Many growers find that too severe pruning during the third and fourth years tends to make the tree produce a great quantity of wood with practically no fruit during the fourth and fifth years, when the trees should be bearing. The tree's first crop should be produced during the fourth year on the third year's growth. For this reason the pruning in the third and fourth years should not be so severe. Therefore, while the pruning in the first two years has been more to shape and form the head of the tree, in the third and fourth years it should be more to thin out the wood in order to let in light and air and very little heading back is given except to stiffen and give strength to the limbs. One can do considerable thinning out in this respect without heading back much, and no injurious results will follow.

At the end of the fifth year, when the tree is reaching its most profitable period, it will be necessary to again head back to keep the tree in bounds and the fruit near to the ground. The tree should not be allowed to carry too heavy a crop in the fourth year, but in the fifth year it should carry a full crop. The spring is the best time to do the pruning, especially of bearing trees, as often one can tell the amount of winter injury to buds and wood, and prune accordingly.

In pruning off limbs care should be taken to cut close to a bud or a limb, so that the wound may the better heal over. Also one can do much in shaping the head by watching the position of the buds and pruning to a bud pointing in the direction that it is desired to have the tree grow.

The standard distance for planting in the Niagara District is eighteen to twenty feet each way.—T.G.B.

A Tent Ready For Use.—No. 2

The men are preparing to put the cyanide and acid under the tent, where it is allowed to burn for one hour.

Orchard Spray Calendar for 1912

Prof. Wm. Lochhead, Macdonald College, Que.

Fruit-growers should begin preparations for the spraying of their orchards in early spring. The spraying outfits should be thoroughly overhauled and tested so that there may be no delays in the busy season. Extra lengths of strong hose, capable of withstanding 250 pounds pressure, and supplies of nozzles of the kind that experience has shown to be the best, should be procured for cases of emergency. In addition, the necessary season's supply of chemicals, such as lime-sulphur (or the commercial lime-sulphur, if that is preferred), bluestone, good stone lime, Paris green, or preferably Arsenate of Lead, and White Arsenic, should be purchased and stored in readiness for active operations. If the lime-sulphur wash is to be made on the premises, attention should be given to the construction of a suitable boiling outfit, so that no delay may result at the last moment. There should also be a goodly supply of coal-oil barrels on hand for storing stock solutions of lime-sulphur and Bordeaux.

PLANT	FIRST APPLICATION	SECOND APPLICATION	THIRD APPLICATION	NOTES
Apple	Use 1 (a), or 2 (a) just before the leaf buds open, for hibernating insects such as scales, bud moth, case-bearers, scab, canker and leaf spot.	Use 1 (b), or 2 (b) just before the blossom buds open for curculio, canker worm, tent-caterpillar scab, canker and leaf spot.	Use 1 (c), or 2 (b), or 8 immediately after blossom petals have fallen, and before the closing of the calyx-cup for codling-worm, canker worm, curculio and scab.	Use 1 (c), or 2 (b), or 8 a few weeks later if scab or codling worm threatens; apply whale-oil soap solution if aphids become troublesome; for apple maggot gather promptly and destroy completely all fallen wormy fruits. For twig-blight cut out and burn branches and twigs as soon as observed.
Pear	As for apple, to control scale, scab, blister-mite.	As for apple, to control curculio, tent-caterpillars, scab.	As for apple, to control scab, curculio and others.	Another application of 3 (a) if scab threatens. For Psylla apply whale-oil soap solution when leaf buds open, and again a week later. For slugs spray with 3 (a) or dust with air-slaked lime.
Peach	Use 1 (a), or 2 (a) before buds begin to swell, to control scale, leaf-curl and brown rot.	Use 3 (b) after the fruit is set to control curculio and brown rot.	Use 3 (a) a month later for brown rot and scab.	Another application later, if brown rot is severe: Remove and destroy all trees showing "Yellows," or "Little Peach," or those dying from shot-hole borer. Spray with whale-oil soap solution if aphids appear.
Plum and Cherry	Use 1 (a), or 2 (a) just before the buds burst for scales, brown rot and shot-hole fungus.	Use 1 (c), or 2 (b), or 8 when fruit is fairly set, for curculio, green fruit worms, brown rot and black-knot.	Use 1 (c), or 2 (b), or 8 about two weeks later. Repeat if brown rot threatens. If "slug" appears use 3, or dust with dry, air-slaked lime.	If Black-Knot is present, out out twigs and burn them. If aphis is abundant, spray with whale-oil soap solution. Mummy plums should be destroyed in autumn.
Grape	Use 7 or 8 or 3 (b) as buds begin to swell, or when third leaf makes its appearance, to control black rot, mildews and flea-beetle.	Use 7 or 8, or 3 (b) before the blossoms open, to control black rot, mildews and flea-beetles.	Use 7 when the fruit is set, about two weeks later, for black rot and mildews.	Use 7 again if black-rot threatens and before rains in moist weather. If "Thrip" makes its appearance, spray with whale-oil soap solution (5) in July. Dusting with sulphur is effective against the Powdery Mildew. Mummy and wormy grapes and pruniugs should be destroyed by burning.
Currant and Gooseberry	Use 1 (c), or 2 (b) before buds open, to control mildew.	Use 1 (c), or 2 (b) just before blossoms open for mildews and currant-worm.	Use 1 (c) ,or 2 (b) after fruit is formed for mildew and "worm."	Hellebore is effective against the "worm" when fruit is large. If aphids appear, spray early and thoroughly with whale-oil soap solution (5).
Raspberry and Blackberry	Use 7 before leaf-buds open, against anthracnose, leaf-spot and saw-fly larvae.	Use 8 two weeks later.		If "orange-rust" appears, remove and burn affected plants at once. If anthracnose appears, cut affected canes and burn. Set out no new plants affected with "crown gall."
Strawberry	Use land broken for more than 3 years if white grub is common. Use only healthy plants for setting. If leaf-spot or "rust" is troublesome keep plants covered with Bordeaux throughout first season; in second season spray with Bordeaux before blooming, and after picking mow and burn. Take but two crops. Dig out white grubs as soon as injury is observed.			
Tomato	Spray plants in seed bed with Bordeaux; spray at intervals with Bordeaux if danger of rot or leaf-spot is feared.			

Spraying Mixtures

1. **HOME-MADE CONCENTRATED LIME-SULPHUR WASH.**—A combined insecticide and fungicide, hence a very valuable spray.

FORMULA.—Lime, 50 lbs.; sulphur, 100 lbs. and water, 40 gals.; prepared by boiling for nearly an hour, and afterwards diluted to proper strength. A hydrometer is necessary to get the proper dilutions: 1 (a) in early spraying on dormant wood wash should have a specific gravity of 1.030; 1 (b) for spraying before blossoms burst a sp. gr. of 1,009; and 1 (c) for spraying just after blossoms fall—1.008. (For details see Prof. L. Caesar's Reports.)

2. **COMMERCIAL LIME-SULPHUR WASH.**—2 (a) used on dormant wood at the rate of 1 gal. to 9 gals. water; 2 (b) on foliage 1 gal. to 40 gals. water.

3. **ARSENATE OF LEAD.**—A valuable insecticide for biting insects, (a) used alone—2 lbs. to 40 gals. water; (b) with lime-sulphur wash or with Bordeaux mixture—2 lbs. to 40 gals. of the wash.

4. **PARIS GREEN.**—Used for poisoning biting insects, ¼-½ lb. to 40 gals. water; 1-2 lbs. . quicklime should be added to prevent burning. Usually applied along with Bordeaux.

5. **WHALE-OIL SOAP.**—A good contact insecticide for sucking insects such as plant-lice, leaf-hoppers, etc.—1 lb. soap to 5-6 gals. of hot water.

6. **HELLEBORE.**—(a) 1 oz. steeped in 2 gals. water; or (b) used dry, pure or mixed with 5 parts of cheap dry flour.

7. **BORDEAUX MIXTURE.**—The standard fungicide.

FORMULA.—Copper sulphate, 4 lbs.; best stone lime, 4 lbs.; water, 40 gals. Dissolve the copper sulphate in a barrel in warm water, and make up to 20 gallons; slake the lime slowly in a second barrel, and add water to make up 20 gals.; pour the lime mixture into the sulphate solution. If the prepared Bordeaux turns reddish with the addition of a little ferro-cyanide of potash add more lime.

8. **POISONED BORDEAUX.**—2—3 lbs. of arsenate of lead, or ¼ lb. Paris green, added to Bordeaux, as prepared in 7.

Spraying the Peach Orchard

W. J. L. Hamilton, South Salt Spring, B. C.

BEFORE attempting to spray his orchard, the owner should make a study of the different pests he has to combat and become familiar with their appearance, as it will clearly be impossible for him to attack them intelligently without this knowledge. Where it occurs, the San Jose Scale is probably one of the most injurious insect pests the peach grower has to contend with. If neglected it quickly destroys the tree, spreading with amazing rapidity. It has been estimated that one San Jose Scale insect will produce about three millions at the end of the season.

To control this Scale, one application of the ready-made (factory-made) lime-sulphur wash, strength one to fifteen of water, to which one pound of salt is added to every ten gallons of the dilute solution, should be applied in the spring whilst the tree is fully dormant. If any of the last year's growth is immature it will likely be injured by this application. It is by far the most efficient Scale insecticide, besides which it kills fungous disease spores wintering on the tree.

The curculio is another serious enemy to the peach grower. It can be combated: One, by destroying the trash around the orchard in the winter where the parent beetles shelter; two, by gathering and burning all immature peaches as they drop, since these contain the grubs; and three, best of all, spraying with lead arsenate, two pounds to fifty gallons of water, to which three or four pounds of fresh slaked lime has been added. This must be kept thoroughly stirred. Or the lead arsenate may be added to a solution of lime-sulphur, one to forty or one to fifty in like amount, if leaf curl or other fungous diseases are present. This should be applied after the blossoms fall, and twice afterwards, about ten days apart, if needful.

Some damage may be done to the foliage by this spray, varying with the variety of peach and with the locality. If the damage is excessive, further dilution of the lime-sulphur is recommended. In using lime-sulphur for peach trees, always use salt as before directed. This is important. The peach borer can be partly controlled by piling the earth around the trunk of the tree to the height of about one foot. This should be done during the blooming season, and the mounds may be levelled in October. The stems can also be painted with the following: Two quarts green soap, two ounces paris green, half a pint crude carbolic, to a pailful of water thickened with lime and clay to thin paste.

Killing the worms whilst under the tree bark in spring and fall is advantageous. Cultivation of the orchard also destroys these enemies. Many a peach tree is injured by the black peach aphis, which attacks both roots and foliage. Before planting nursery stock the roots should be examined to see that they are free of this pest.

Spraying with whale oil soap or kerosene emulsion will remove this pest, and, if it infests the roots, tobacco dust worked round the tree is efficient. If nursery stock is affected, dip the roots in whale oil soap solution before planting.

The peach twig borer, a not very common, but very injurious moth larva, can best be destroyed by winter spraying with strong kerosene emulsion. The bark beetle generally attacks aged and decrepit trees, whence it spreads to others, which it quickly girdles. Cut down trees thus affected and burn them at once to kill the grubs.

Amongst fungous diseases, lime-sulphur (which is rendered fifty per cent. more efficient as a fungicide by the addition of arsenate of lead, as previously directed) is the remedy for leaf curl and lecanium (a sooty deposit on the leaves). Peach yellows, so far as I know, has never yet been affected by any treatment, so its only remedy is to at once dig up and burn all trees suffering from it.

The following sprayings are recommended where the before mentioned diseases are present: One, in dead of winter, on those trees which are very seriously affected with leaf curl, two pounds bluestone to fifty gallons water; two, in spring, whilst trees are dormant, lime-sulphur-salt as directed; three, after blossoms drop (for curculio and other leaf and fruit eating insects), dilute lime-sulphur, salt, and arsenate of lead as directed; also ten and twenty days later if curculio is bad. If there is no bad disease, dilute the lime-sulphur one to fifty, with two pounds arsenate to the barrel of solution; four, for aphis, where necessary, kerosene emulsion or whale oil soap.

Best Varieties of Fruit to Plant

R. M. Winslow, Victoria, B. C.

The red apples of varieties ripening from October to May have given better results, as a rule, than any other class of fruit under the conditions now existing in British Columbia. The high price of labor militates against the rapid expansion of the small fruits industry, though the market conditions are very favorable, while the same applies to a lesser extent to the sweet cherries, which do well, particularly throughout the interior. Early plums bring good returns in most districts, for shipment by local express, but late plums and prunes are liable to go on to a declining market, due to the extensive plantings of Southern Idaho, which occupy the field about the same time. Main crop plums, prunes, and Bartlett pears prove a good investment where districts produce enough to make shipments in mixed carloads possible, but are not to be recommended in other districts where the supply is at present equal to the local demand, and where there is no likelihood of mixed car shipments materializing at the time plantings commence to bear.

British Columbia's ability to produce large and heavy crops of high-class red apples of dessert varieties is now so well established as to justify the present demand for nursery stock of these varieties. While the summer fruits may, in some cases, provide a return a little earlier, experience has shown that for stability of market and net returns the winter apple is the best of all fruits.

Dehorning Peach Trees

If peach trees are old we would not advise dehorning, but if they are middle aged they can be dehorned with profit. The best time to cut the trees back is in the late part of the winter or early spring.

It is best not to dehorn the whole tree at once, but leave a limb or two, and when the young sprouts are a year or two old cut the rest of the old ones off, as cutting the whole tree off at once would be too much of a shock for the tree to recover from.—J. W. Smith & Sons.

Spraying is a disagreeable piece of work at any time, but much can be done to make the work more pleasant, and prevent injury to the hands or eyes from the spray mixture. Have a drip guard just below the nozzle. A circular piece of leather with a hole in the center, makes a good one, or a simple piece of small rope tied around the pipe and allowed to hang down four or five inches, will answer the purpose. Have a shut-off tap that does not leak and make sure that all the joints are tight. Put on a pair of cheap leather gloves, to protect the hands, and cover the horses with a pair of canvas blankets. With reasonable care a man should be able to spray all day with very little annoyance from the corrosive action of the spray mixture.

If San Jose scale is present spray with lime-sulphur while the tree is dormant. It will also control leaf curl on peaches and the scurfy bud louse, the blister mite and oyster shell bark louse of the apple.

Remember when purchasing fertilizers that the finer the ground and the drier the substance, the greater their value.

A Garden Where Difficulties Were Overcome

F. E. Buck; B.S.A., C.E.F., Ottawa.

A ROSE in an Ottawa garden on the twenty-first of October is not a very common sight. Yet it was on that date that Mr. G. A. White, of Ottawa, the owner of the garden described in this article, showed me a beautiful rose which he had picked that morning. It was a Caroline Testout—literally the "last rose of summer," and a beautiful one at that. About a month earlier, just after a killing frost on September thirteenth, this same garden had impressed me as being particularly interesting for the time of the year. Many of the autumn flowers formed impressive masses of color, and even on October the twenty-first some of them still remained as if loth to leave this snug little garden to the reign of the frost and the snow. Among these cheerful friends of October were the beautiful Japanese anemones, some fall asters, a lingering clematis or two, a few unusually fine chimney bellflowers, and a beautiful little clump of fall chrysanthemums.

This garden was selected for description in this series of special articles in THE CANADIAN HORTICULTURIST for at least three reasons: The first, it is one of the smallest of the noted gardens of Ottawa; the second, its soil and situation are quite ordinary—in fact, I am given to understand that the soil is exceptionally poor; the third, the owner has done all the work in this garden himself. It is not, therefore, an ideal garden which is too ideal for other people to take as an inspiration to their own efforts in gardening.

And it is as well also to state here, perhaps, that Mr. White does not own the lot himself—he rents it only. Consequently he has not been able to carry out all his ideals along gardening lines. In spite of this, the garden is one which brings him great credit both as a gardener and also as a citizen.

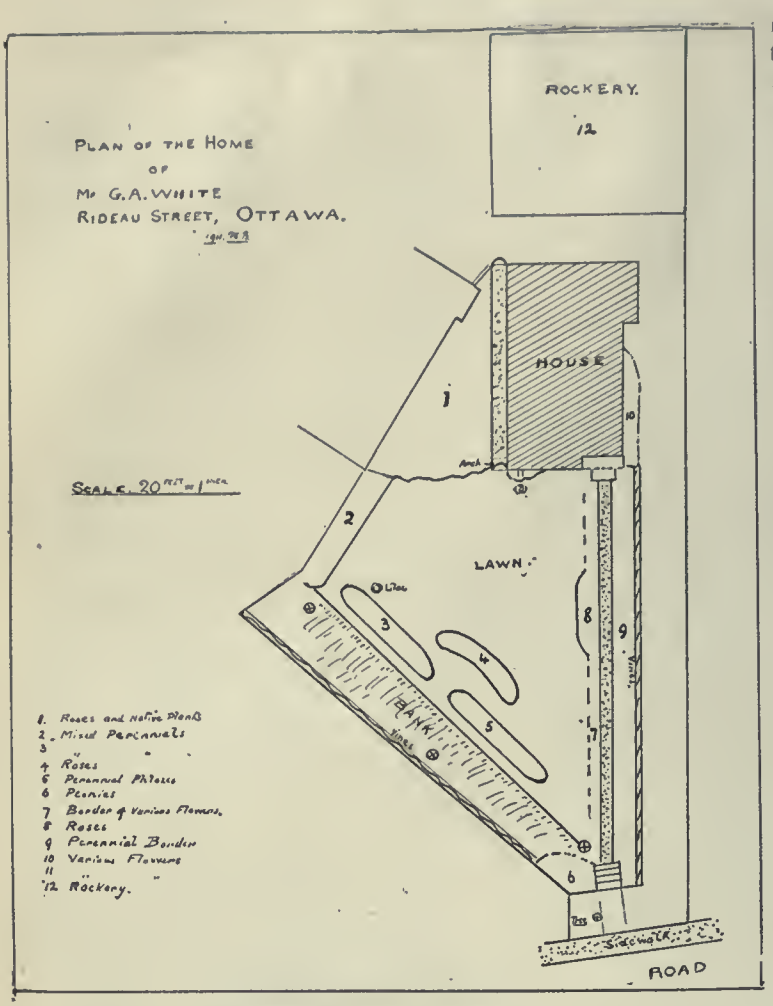
The shape of the garden, as will be seen from the sketch, is somewhat peculiar. At the very beginning it offered several problems for solution, and during the twelve years or so that Mr. White has worked at this garden, he has introduced several features which are particularly pleasing. One of these features, the most striking of all, perhaps, is the wonderful rockery at the back. The aim of the article is to emphasize those points of excellence which may be readily copied by others if they so wish. This rockery, therefore, will have to be passed over in this article in a very brief manner, because it is a piece of gardening which is quite out of the ordinary. Certainly it is unique and demonstrates what may be done with a little ingenuity and work. It is indicated on the plan by the number twelve. When Mr. White first went into the house this rockery, which is now one of the most beautiful sights imaginable during the early spring and part of the summer, was then an eyesore as well as a problem to deal with. It was nothing less than a sandy bank some thirty feet high covered with brush and weeds. By work and patient effort all has been changed. A number of rock-edged terraces and zig-zag paths, built stepping-stone fashion, form ideal spots for growing the many rock loving plants and showy masses of tulips which sparkle in their unique surroundings with wonderful color effect. Many thousands of tulip bulbs are planted on this rockery each year. The main rock loving plants also grown here are given at the end of the article.

SUCCESSFUL IDEALS

In the matter of gardening, as in the matter of many other avocations which people undertake as hobbies, it is not so

A General View of Mr. G. A. White's Lawn and Garden, with the House in the Background

This view shows the perennial border on the right of the picture and beds of roses and perennial phlox on the left. Notice also how the appearance of the house is improved and its width apparently increased by the judicious placing of a vine-covered arch.



Plan of Mr. White's House and Lot

much the lack of the material or the opportunity which are responsible for frequent failure as it is the lack of some ideal around which to centre effort. In this regard it is well to note that Mr. White has had marked success. Besides his rockery he aimed to have another ideal feature in his garden. This second feature is the growing of native wild plants. In the spot marked "1" on the plan he grows some beautiful specimens of that lovely scarlet flower, the native Cardinal flower, also the Columbines and other native plants. In this same spot, as will be seen from the illustration, there also flourishes to perfection the shade-loving Japanese anemones, together with some varieties of roses. This spot, originally a damp, dismal corner, presented quite a problem at first, but it turned out to be ideal for such things. It now makes as delightful a spot as any in this garden.

SUCCESS WITH ROSES

Mr. White is a great lover of that queen of all flowers, the rose. He attributes his success in growing them to very simple methods. Late in the autumn he heaps up a little earth or preferably some turf sods around the roots. He then bends over the vines, placing under them a few leaves to act as a cushion so that the weight of snow above may not break them. Finally a few more leaves, or what is very much preferred, an evergreen bough, is thrown on the top. This forms a very simple winter treatment, but it has proved quite effective.

Rather late in the spring he uncovers and prunes the vines, giving severe pruning for some varieties, but very light for others. This treatment with a little attention during the summer brings him a succession of roses every month in the flowering season. He advises the use of lime as a simple remedy to keep away the rose slug. The varieties which he has found most satisfactory are as follows:

Climbers—Crimson Rambler and Dorothy Perkins.

Hybrid teas—Caroline Testout, La France, Killarney. Caroline Testout, in his experience, has proved to be the hardiest, and it has always come through the winter safely.

Hybrid perpetuals — Reds — Ulrich Brunner, General Jacqueminot (the best rose for abundance of June bloom), Captain Hayward, Prince Camille de Rohan (a grand rose), and Fisher Holmes.

Pinks—Her Majesty, Mrs. John Laing, Suzanne Marie Rodocanachi.

Whites—Frau Karl Druschki, and the Rugosa rose, Conrad F. Meyer. He has found it very harmful to put manure of any kind around roses for a winter protection. He also objects to fall pruning of roses, except to a little which might be undertaken with success in the vicinity of Ottawa if done in the month of September.

PERENNIALS

Most of the flowers grown in this garden are herbaceous perennials. The perennial border, marked nine on the plan, contains some fine display of color at various periods of the flower seasons. Both tall and low growing plants are used. Among the tall plants the Sweet Rocket, hollyhocks, delphiniums, and phloxes predominate. Bulbs, Oriental poppies, irises, Sweet William, Rock Cress, Adonis, and so forth, also occupy prominent positions.

RECOMMENDED PLANTS

Everyone, of course, has favorite flowers, and Mr. White has, but he does not limit his gardening ideals to growing favorite flowers only. The list of flowers which follows will indicate better than anything else the general knowledge which Mr. White possesses of flowers which may be grown with success by the amateur. On the rockery he has found these flowers do well.

ROCKERY AND OTHER PLANTS

Arabis albida—rock cress; Aquilegia—columbines in variety; Iris—irises in variety; Primula—in variety; Iris—dwarf, pumila, etc.; Alyssum—madwort; Erysimum — wallflower; Campanala—bellflowers; Anemone sylvestris; Phlox subulata—moss pink; Heuchera—coral bells; Dianthus—pinks, Mrs. Sinkins, etc.; Narcissi—in variety; Aubretia—purple rock cress; Aconitum—monkshood; Epimedium—barrenwort.

A paeony garden is another feature of this garden. It is marked "6" on the plan.

Amongst the shade loving plants the Triliums (Wake-robin), the Globe flowers, and native ferns have done exceptionally well.

Besides the several thousand bulbs planted on the rockery each year many are also planted in with the roses. This year several quite new varieties of daffodils and narcissi were planted in the rose beds. These Mr. White imported direct from the Old Country. He says that he "never misses a year without trying some new introduction or novelty."

The four facts which Mr. White's success emphasizes are: It pays to specialize in a few plants, to grow the best of everything, to try novelties, and to persist in patient effort. These four points are well worth keeping in mind, especially by anyone who is gardening for pleasure and results.

When transplanting annuals into a flower bed I keep a supply of each kind in reserve in the box. These are used to fill in spaces that may be left through any of the plants failing to grow.—D. W. Marden, Pilot Mound, Man.

Sweet peas require deep spading, at least two feet deep, well enriched, and the peas planted very early in the spring at least one inch deep. If after they are up and ready to climb they are simply left alone and given no support and allowed to sprawl all over the ground, what kind of sweet pea flowers could be expected? Sweet peas require special attention both before and after planting, and if they don't get it you won't have good peas.—D. W. Marden, Pilot Mound, Man.

A Piece of Skilful Gardening in Mr. White's Garden

This damp, sunless corner between two houses in Mr. White's garden was turned into an ideal spot by using suitable native and other shade-loving plants. The native cardinal flower flourishes to perfection here.

Spraying Plants Indoors

Wm. Hunt. O. A. C., Guelph, Ont.

THE necessity of spraying to keep down insect pests and plant diseases in connection with all outdoor horticultural pursuits becomes more apparent every year. It is even more necessary in connection with indoor plant growing on account of the more unnatural conditions prevailing in the greenhouse and window, such as a dry, arid atmosphere produced by artificial heat and lighting, or possibly an impure atmosphere produced by gas fumes from furnaces, stoves, or from gas jets. No better element to counteract the bad effect of these last-named on plant life can be found than moisture, whether by water applied directly to the plant or as a vapor induced by the process of evaporation.

Not only is a moist atmosphere and moisture necessary for the health of plants from a cultural point of view, but it is just as necessary as a preventive of insect pests, few of which can exist or endure the direct application of water or thrive in an atmosphere heavily impregnated with moisture. The dry and almost super-heated atmosphere out of doors in summer are ideal conditions for the increase and spread of insect pests.

Tropical climates, where a moist, humid atmosphere prevails, are almost immune from many of the insect pests that are common here. Hence the desirability of moisture to counteract the aridity arising from the artificial heat that prevails in our dwellinghouses in winter. At the same time, it is quite possible to go to the other extreme by injudicious spraying, that will induce plant disease in some form, more especially with the more tender foliaged plants.

All greenhouse men know the absolute necessity there is for spraying or syringing in greenhouses. A few words on the main points may be of service to those who have small greenhouses.

The spraying or syringing of plants should be a distinct and separate operation from the watering proper. If the two operations, watering at the roots and spraying, are attempted at the same time, neither of them can be done successfully. Either the plants are soddened with too much water or some are missed altogether. Water the plants as required at the roots first, then do the spraying after.

I have seen batches of small plants and many fine specimen plants badly injured by the careless application of water to the foliage under heavy pressure from the hose. A fine spray, thoroughly applied so as not to miss any part of the plant that requires spraying, is better than a heavy application only partially applied. Thorough, not necessarily heavy, applications are quite as necessary in all spraying operations as the proper mixing of the material if insecticides are applied.

Glaucous or glossy leaved plants can be sprayed very frequently. The rougher or hairy-leaved plants should not be sprayed so frequently or heavily. A few kinds, such as Rex Begonia, gloxinias, tuberous-rooted begonias, having hirsute or hairy foliage, are best not sprayed at all, if it can possibly be dispensed with.

There are very few plants that can be syringed or spread overhead when in full bloom without danger of injury to the flowers. The tender texture of the petals of most flowers are very easily injured if allowed to remain in a damp condition for any length of time. If the foliage of plants in flower has to be sprayed, it is best to spray from underneath rather than over the top. The moisture will thus reach the part of the foliage where insect pests are usually found, and it will not injure the blooms so much as overhead spraying. An angle nozzle on the syringe or hose that will give an up-cast spray is advisable for greenhouse work.

The temperature of the greenhouse should not be allowed to rise unduly high on flowering plants when they have been syringed or sprayed. A high temperature and a very humid atmosphere will often damage many of the more tender blooms without actual contact with water. Open the ventilators a little to allow the heated humid air to escape after spraying flowering plants, so as to avoid damage to the blooms. The best time to spray flowering plants is in the morning on fine bright days.

SPRAYING FOLIAGE PLANTS

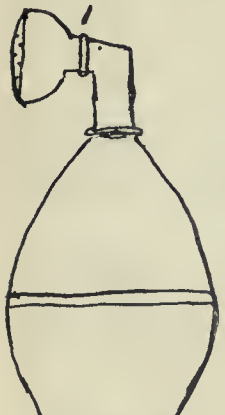
It is scarcely possible to have a too humid atmosphere for foliage plants. The treatment of these in regard to spraying is directly opposite in many respects to that of flowering plants. Both overhead and underneath spraying can be indulged in freely with all kinds of foliage plants, such as palms, crotons, dracaenas, and similar plants. The best time to syringe or spray these plants is in the afternoon while the sun is still shining a little on the house. By spraying thoroughly at this time of the day and closing the ventilators up tight, a dense humid vapor almost like steam is

caused that is very beneficial to the plants as well as helping to keep down the insect pests most common and injurious to them, viz., thrip, red spider, and mealy bug. The floors and heating pipes can also be dampened at closing-up time to increase the humidity. If foliage plants are sprayed in the morning, except perhaps in very cold weather in winter, ventilation must be given before the hot sun strikes the house, or the plants must be shaded in some way to prevent "scald" or "burning" of the foliage. Many fine palms and similar plants are often ruined, especially in early spring, for want of shade or ventilation to prevent this scalding or burning of the foliage.

An angle nozzle with a fine spray for attaching to a hose or syringe, is an invaluable adjunct to the equipment of any greenhouse, if judiciously used.

LIQUID INSECTICIDES

It becomes necessary to spray plants with liquid insecticides sometimes as a remedy or preventive of insect pests or disease. Spraying has to a very great extent superseded fumigation in greenhouses for this purpose, being more direct in its effect on many insect pests and diseases, more economical to use, and often less injurious to many forms of plant life than fumigation.



Scollay's Rubber Sprinkler with Nozzle

To fill the sprinkler unscrew the rose or sprinkler at 1. Press the air out of bulb, hold it under the water in an horizontal position and allow the bulb to fill and expand gradually. Clear liquid or water is desirable. One of the best appliances for spraying a small collection of plants.

For the application of liquid insecticides for large greenhouses a knapsack sprayer is best. For smaller greenhouses a brass garden syringe or a "Scollay Rubber Sprinkler" is the best appliance.

For aphids, thrip, red spider, white fly, and mealy bug, spray frequently with clear tepid water under pressure as a preventive. The following liquid insecticides are also good remedies for these pests: Nicotine preparations or strong tobacco solutions of any kind; whale oil soap solution (one ounce of soap thoroughly dissolved in one gallon of water is very beneficial) or sulpho-tobacco soap. This last is sold in seed stores and is also a good insecticide.

The whale oil soap solution applied with a soft brush so as to move the scale, and a spraying with clean water afterwards, is the best remedy for scale insects that infest palms, ferns, rubber plants, oleanders, English ivy, and similar plants. "Move the scale and it will die" was one of the axioms or rules that used to be, years ago, always impressed on young florists. It applies now with equal force, especially to amateur plant growers.

For mildew and black spot diseases, that attack roses and chrysanthemums, and also for the mycelium or "damping off," there is no better remedy than finely powdered flowers of sulphur, dusted on when the foliage is damp, not wet.

All of the foregoing remarks will apply with more or less force to the care of window and house plants. Due regard should be had to the changed conditions and surroundings, such as temperature and facilities for spraying.

In spraying operations, as with everything else in connection with horticultural operations, do not neglect doing it until it is too late. "An ounce of prevention is better than a pound of cure." And when spraying, spray thoroughly.

Orchid Growing for the Amateur

J. A. Ellis, M.L.A., Ottawa, Ont.

A POPULAR impression about orchids is that they are very expensive. This is not entirely correct. It is true that rare orchids are very expensive, but that is generally on account of their rarity and not on account of their beauty. Some of the most beautiful orchids are only a dollar or two. It can be taken as a general rule, that the orchids that we now and again hear have been bought for fabulous prices are no more beautiful, and in most cases not as beautiful, as the common, cheaper ones.

Another popular impression is that orchids are extremely difficult to grow, and that only experts can manage them. This, too, is erroneous to a great extent. The culture of orchids divides them naturally into three classes, viz., stove, intermediate, and cool. The stove varieties require a temperature of sixty-five to eighty degrees in summer, and of sixty to seventy degrees in winter. The intermediate want sixty to seventy degrees in summer, and fifty-five to sixty-five degrees in winter. The cool varieties will do with fifty-five to sixty degrees in summer, and forty-five to seventy-five degrees in winter.

It will easily be seen that the stove orchids require a degree of heat which can only be secured by special greenhouses and constant attention. The amateur, who has other things to attend to besides his plants, should not try to grow this class of orchids.

ORCHIDS FOR AMATEURS

Nearly all the cool house orchids and many of the intermediate ones can, however, be grown by an amateur in the same greenhouse most successfully. The elimination of the stove varieties cuts out many lovely flowers, but the intermediate and cool house ones comprise a wide range, and some of the most beautiful. I, therefore, advise the amateur to confine himself to these two latter classes. If he does, he can secure exceedingly beautiful flowers at a low cost for the plants, and he will find that these orchids are the most easily grown of all plants. In fact they are easier to grow than fuchsias, begonias, or even geraniums.. They require very little attention, want re-potting only about every third year, are remarkably free from insect pests, do not require pruning or clipping, are always in good form and shape, and even when not in bloom generally have beautiful green leaves. In order to grow them successfully, however, their simple requirements must be understood.

ESSENTIALS TO SUCCESS

The first essential is to keep the correct temperature already given. Also absolutely essential are, a plentiful circulation of fresh air, shading from the hot summer sun, and an abundant supply of moisture. These matters will be readily understood when it is remembered that in their native habitant most of them grow on dead trees, where they are in shade, and over swamps from which a constant moisture arises. Other varieties grow on swampy ground.

Fresh air is vital to them, and should be admitted on all possible occasions. There should be both bottom and top ventilators, so that the air can freely circulate throughout the greenhouse and around all the plants.

The greenhouse should be shaded in summer, either with roller blinds, or which is quite as satisfactory, by heavily whitening the glass. Orchids will not stand the direct hot rays of the sun.

Moisture is best supplied by overhead watering with a hose. When the plants though are forming their young flower shoots care must be taken that water does not lodge around these shoots else they will decay. Dipping the plants in water until the pots are submerged does them a lot of good in summer. In winter watering two or three times a week is ample, but in summer during the growing period watering every day, and sometimes twice a day, is necessary. Some liquid fertilizer given during the growing season is beneficial. If the plants are dipped, this is easily done. Whilst plenty of moisture is desirable, the plant should never stand in water.

Orchids are generally potted in peat fibre, with a little fine moss mixed with the fibre, and the compost covered with green growing moss. If this green moss

is in a thriving condition the plant is thriving. The plants are greatly benefitted by frequent dampings between the pots, especially in summer. If grown in pots these must be well drained, and about one-third filled with crocks to enable the water to run off freely. Many orchids are grown in cribs or baskets.

PLANT CHARACTERISTICS

Most orchids consist of bulbs, with a pair of leaves on each bulb. Every year a new bulb grows from the bottom of the previous year's bulb, and the flower stalk either comes from the base of the bulb or the top of it. Some orchids, such as the cypripediums, throw up the leaves from roots, and the flower stems come from the centre of each cluster of leaves.

A SMALL GREENHOUSE

I have a small lean-to greenhouse, with a southern exposure, about twenty feet by fifteen. It has a stone foundation, and a brick wall of about four feet. The end, side and roof are, of course, glass in wooden frames. It has been built many years, but if I were building it now I would use iron frame construction for the end, side and roof. It is heated from my house furnace; and contrary to what is generally supposed, I find no difficulty from this method of heating. It cost me about $250.00 to build, including heating, but would probably cost rather more now.

I have wooden benches inside, composed of narrow pieces of one-half inch wood, with a space of about an inch between each. This allows the water to run off freely. Under the benches is an earthen floor. This retains some of the moisture which arises from the watering, and thus helps to keep the atmosphere moist.

The greenhouse has a door opening into my back parlor, and another one opening into my kitchen. This enables some air circulation to be obtained even in severe winter weather, when it is altogether too cold to open the ventilators.

Those orchids which in the wild state grow on trees do best when hung near the glass, at a distance of two or three feet away. Those which in a wild state grow in swamps are best suited to growing on the bench. In my greenhouse I have practically two lots of plants—one lot on the benches and the other hung overhead near the glass. I have about one hundred and fifty plants in all and about fifty kinds.

I need scarcely say much about the beauty of orchid blooms. To my mind they are the silks and satins of flowers, the flowers of other plants being the cottons and woollens. The delicacy of coloring is their greatest glory. It is only of late years that florists in Canada have begun to realize that orchid blooms are easy to grow. They command a good price as cut flowers, and always will, because you cannot get many blooms from a plant, and these only once a year.

The kinds which I grow are, of course, those of the cool house, and those of the intermediate class which will grow in the same house. I do not grow many of those which bloom in summer. I thought I could get lots of flowers outdoors in summer, and, therefore, I grow mostly those varieties which bloom in the late fall, winter, or early spring. By doing this I always have some flowers for my house all the year round; and I certainly get the most lovely ones from my orchids right in the middle of winter.

(To be continued)

Spraying and Fumigating in the Greenhouse

E. M. Straight, Macdonald College, Que.

ETERNAL vigilance is the price of freedom from disease and insect pests in the greenhouse, as elsewhere. No part of the plant is immune, below ground as well as above; and from the time that the young seedling sends up its two cotyledons until the harvest, it is constantly in danger. It is worth noting that for all greenhouse work an ounce of prevention is worth a pound of cure.

Fungicides, for the most part, are intended for use as preventives rather than cures. To be effectual they should be applied before the disease has any hold upon the plant. The same is true with many of the insecticides. They are most effective before the insects have reached their full development. One reason for the early application of the remedies against both insects and diseases is that they multiply very rapidly. If not checked at the start they may propagate and become so numerous that much harm may be done.

No man can intelligently fight insects or combat disease without knowing the enemies which he must meet. There are men who persistently attempt to poison plant lice, and wonder why Paris green will not kill them. Recently I was asked which I thought better for potatoes—bordeaux mixture or paris green. If every person could be convinced that bordeaux is a fungicide, that stomach poisons kill only such insects as chew, and that sucking insects, as aphides, are killed by contact, they would have mastered principles of paramount importance. The enemies which every gardener must meet are as follows:

VARIETIES OF INSECTS

Perhaps no class of insects take on more form than the aphis. In color, they differ more. Usually the green aphides are most common, but on the chrysanthemum the black aphis is common enough. Red and blue aphides are common on some plants. The antennae are long, the head small, and the abdomen large and much rounded. During the summer these insects are wingless, but in autumn winged forms appear. During the summer aphides bring forth their young alive, but they winter in the egg stage.

White flies are not flies in the true sense, but close relatives of the aphides. Adult males and females are winged. The wings are outspread. In this they differ from the aphides.

The red spider is also wrongly named, as it is not an insect or spider, but a mite. They are exceedingly small. It is very seldom that you see them unless

Sterilizing with Steam for Nematode, at Macdonald College, Quebec

Wingless Aphis, Greatly Enlarged. Thrips

you look with great care. Only as adults are they red. While young they are green or yellow. The leaves attacked first turn a light green and later yellow and eventually fall from the plant. If houses are properly ventilated and the correct moisture content maintained, red spider will give little trouble, as it thrives in a hot, dry atmosphere.

The thrips have long slender bodies and four wings. The wings are fringed.

Red Spider Mealy Bug

The thrips, because of the peculiar formation of their mouth parts, have the power of biting and sucking. It is very difficult to decide from the nature of the injury whether a sucking or chewing insect has been at work.

The mealy bug is one of the scale insects. It is so called because of the white cottony substance with which they cover themselves. When about to lay eggs, a mass of long, cottony particles of wax is secreted, under which the eggs are deposited. The male is somewhat different from the female. It is darker. The wings are long and gray.

In every damp, untidy house slugs, snails and sow bugs are much in evidence. They delight in damp, decaying, unwholesome quarters. Slugs are especially fond of seedling plants, and sometimes give much trouble, but are easily got rid of.

Eel worms have given as much trouble at Macdonald College as any other greenhouse pest. These nematodes work on the roots, and gall-like swellings are produced, which interfere seriously with the normal development of the plant. When they once get into a bed they are got rid of with much difficulty.

FUNGUS DISEASES

The most common diseases caused by fungi in the greenhouse are the following:

Carnation Rust was first noticed in this country about 1890. The plants were attacked some time before any pustules were formed. These are noticed just beneath the surface. Soon the epidermis bursts showing large numbers of brown spores.

The chrysanthemum is subject to a number of forms of fungi, which are commonly called "leaf-spot." Picking off every affected leaf will sometimes hold the disease in check, but the spray pump is essential in many cases.

Lettuce growers are fortunate if they have not seen more or less of the rot, usually more if Boston Head Lettuce is grown. Particular attention must be given to the soil. The disease revels in a wet, heavy soil. Decaying vegetable matter forms an excellent medium for its development, hence manure should be well worked into the soil.

Young seedlings are very subject to "damping off." This fungus is not a refined species, for it attacks the stem close to the ground and almost at once causes the death of the plant, thus depriving itself of further food supply. However, it is not dependent on any one plant. A host of seedlings are subject to its attack. Too much water and sudden change in temperature produce conditions favorable to the growth and rapid development of the fungus. If the "flats" have a large amount of sand in the surface soil, and some care exercised in the watering this disease will give little trouble.

The control of all these difficulties group themselves under three headings, viz., spraying, fumigation and sterilizing. Spraying may be with some arsenical for insects which chew; or some contact poison for insects which suck; or for the various forms of fungi. Fumigation may be used for the control of insect life which cannot be readily controlled by the ordinary spray mixtures, in fact, it is coming into general use, and constantly crowding out the sprays. Sterilizing is used for such forms as occur below ground. It may not be perfect sterilizing in the strict sense of the term, for bacteria are still alive, unless the process is much prolonged. Such a condition would not be desirable, and for all practical purposes is never sought.

Of all the arsenicals, paris green still holds a prominent place. Arsenate of lead probably sticks better than the green, but we think that the old poison is still more extensively used in the greenhouse. One teaspoonful to two or three gallons of water will usually clear out many leaf eaters. A small amount of water-slaked lime will prevent any burning which might occur from the presence of any soluble arsenic. This is effective for thrips; and if added to sweetened bran will clear out slugs, and similar pests. Hellebore is used for a similar purpose, and may be used in any required strength. It seldom or never injures plants.

CONTACT POISONS

Contact poisons are not used to the same extent as they once were. The old reliable kerosene emulsion is still sometimes used and most excellent results have been secured, but few growers have used it long without having some injury to the foliage. Plants will not

Fumigating with Tobacco Stems, All Ready to Start The Fire

Fumigating with Tobacco.—A Good Smoke

stand free kerosene, and you are likely to get some. Tobacco decoction, or, better, nicotine, especially put up for greenhouse work. will be found more satisfactory. Hot water kills most insects by contact and may be used to advantage. Water at one hundred and fifty degrees will kill many insects, and will not injure the plants, while cold water sprayed on plants is found the best preventive against red spider, and is much used in every greenhouse.

Bordeaux mixture, four-four-forty, is effective for many kinds of fungi. It is somewhat objectionable because of the unsightly appearance which it gives the plants. Where this is not a serious objection, however, bordeaux is a great aid to the grower.

FUMIGATION

Fumigation has become the greatest aid of the greenhouse man, hydrocyanic acid gas is the most effective. It is a powerful poison. The fumes of this gas are fatal to all animal life. The gas is produced by the action of sulphuric acid upon cyanide of potassium in the presence of water. The formula used is one ounce of cyanide, two ounces of sulphuric acid and four ounces of water. Much controversy has occurred concerning the amount of space which this should be used in. Much depends upon the kind of plants you have, and the length of time the house is under fumigation.

Most of the commercial houses have only one way of opening the ventilators and that from the inside. Because of this the houses are usually fumigated the last thing at night and not opened until the next morning. Under such conditions the same amount of cyanide cannot be used as there would be with a shorter fumigation. Taking the ordinary house, with an all-night application, one ounce of cyanide to two thousand or twenty-five hundred cubic feet, is as much as we dare recommend. This will hold white fly in check, and will clear them out if used a few times at intervals of a few days.

Cyanide can not be carelessly handled. Men do handle it, however, without the great amount of trouble which it formerly gave. The first time that we used it, the chemical was tied in a paper bag; a cord fastened to the top; placed over a pulley; and bag and contents lowered into the acid after we had gone out and bolted and barred the door. At present the jars are arranged containing acid and water and the cyanide wrapped in paper. The operator simply throws the material in the jars and rapidly walks out.

For aphides fumigation with tobacco is still the proper thing to do. The poisonous alkaloids found in tobacco are fatal to these lice. The stems may be obtained at any cigar factory. They must not be too dry. What we want is a dense smoke, and this is only obtained when the stems burn slowly. These stem may be burned in many ways. Some gardeners merely pile the required amount upon the floor, and set fire to it by means of shavings. We have found a piece of old stove pipe, arranged as per illustration, a very effective burner. The frequency with which a house should be smoked cannot be definitely stated. Do it as often as you are obliged to. Never allow aphides to get too great a start.

THE USE OF SULPHUR

Sulphur is of the greatest service in greenhouse work, especially for mildews. When mixed with water or milk the material is painted on the steam pipes. The fumes of sulphur are thus constantly given off. Other methods of evaporating sulphur are in common use. A common plan is to put the sulphur in a pan and set it over an oil-stove, with the flame turned low.

Sterilization is not necessary in all greenhouses, but is quite necessary if you have a bad attack of nematode. These eel worms, as they are commonly called, are very minute. Seldom are they seen with the naked eye. But their presence is always manifest by the galls or tubercules which occur on the roots of affected plants. They multiply with extreme rapidity and give no end of trouble.

A few tomato roots badly attacked are here shown.

Our common method of control is to arrange three lines of tile with open joints, through the bed, and by couplings, these tiles are connected with the steam pipes. The steam is turned on, and the soil is cooked. This cooking for twelve hours is usually sufficient. As soon as cool the bed may be set, and should give little trouble afterwards.

We are undertaking a series of experiments with formalin and carbon bi-sul-

Tomato Roots Attacked by Nematode

phide as a means of cleaning out nematode. These materials are used for insects attacking below ground, but we have not sufficient data to come to any conclusion.

Coal ashes while not containing any real fertilizing ingredients, will greatly improve the texture of a heavy soil, making it lighter and warmer. Coal ashes will act in the opposite way on a light, sandy soil, by consolidating it and making it more able to retain moisture.

We start the first tomato plants about March first, and we like to pinch them out often. As soon as they have four leaves on we pinch them out again. You get a better looking plant by firming the soil. We transplant three times—often four. We leaf them in shallow flats. Spark's Earliana is grown for the majority. Chalk's Early Jewel is a fine looking tomato, but two weeks late with us.—J. L. Hilburn, Leamington, Ont.

Here in the west I find it necessary to start nearly all annuals in shallow boxes in a hot bed under glass, which can be done very easily if not attempted too early in the spring.—D. W. Marden, Pilot Mound, Man.

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7. Articles and Illustrations for publication will be thankfully received by the editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of the Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each Issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant, we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed
THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

SPRAYING

Great progress has been made during the past ten years in the general adoption by commercial fruit growers of spraying. Nevertheless we may expect to see even more rapid improvement in the future. The past decade has been devoted in a large measure to experimental work. The lack of definite information in regard to the best sprays to use and methods of applying them, as well as of the cost involved and probable returns, caused thousands of growers to hesitate about adopting this practice. These conditions are now largely a matter of the past. While there is considerable experimental work still to be done and we may expect to see further improvements made in our spraying appliances, still the bulk of this work has been accomplished.

Our agricultural colleges and experiment stations now have in pamphlet form and furnish such complete information, on points that even until quite recently were largely a matter of some uncertainty, even a novice can now readily obtain the information required to enable him to make an intelligent and profitable start in spraying. So many thousand fruit growers in all parts of the country have demonstrated conclusively the profitable results that invariably follow where spraying is properly conducted, the value of spraying is no longer a matter of doubt.

No better evidence of the tremendous increase taking place in the practice of spraying need be furnished than is given elsewhere in this issue by Mr. S. C. Parker, the Secretary of the Nova Scotia Fruit Growers' Association, who makes the statement that last spring alone about one hundred and twenty-five gasoline spraying outfits were bought by the fruit growers of the Annapolis Valley alone and that an equal number will probably be purchased this year. This, although an important fruit centre, represents but a small part of the fruit growing area of Canada. It is typical, however, of the progress that is being made elsewhere in the fruit districts of the Dominion. There are still many thousands of farmers who have not adopted the practice of spraying. These will soon see the necessity for doing so, and thus spraying may be expected to make even greater advances in the future than in the past.

THE EXORBITANT MIDDLEMAN?

As a result of a speech delivered last month by Mr. G. A. Gigault, Deputy Minister of Agriculture for the province of Quebec, at the annual convention of the Quebec Vegetable Growers' Association, in which reference was made to the large part of the final selling price of fruit and vegetables that is taken by the middleman, that association appointed a committee to consider the advisability of forming a joint stock company to handle the products of its members. In other words, the association is hopeful that by some such action some of the profits it is believed now go to the middleman may be retained for the benefit of its members.

We doubt if the middleman deserves one-half of the abuse to which he has been subjected. We venture to say that there is hardly any other line of business in which the proportion of successes to failures is as small as in the commission business. This of itself is a pretty good indication that the profits derived from the handling of the goods are not nearly as large as a superficial glance at the situation might lead one to suppose. The fact is that the middlemen on the average make only reasonable profits. The difference between the price they obtain for the goods they sell and the price paid to the grower is not all retained by the middleman by any manner of means.

The main reason why the growers do not obtain more for their products is because of the excessive cost of doing business in our large industrial centres like Toronto and Montreal. Land in our cities runs up in value to, in some cases, several million dollars an acre. The commission merchants have to do business on land that is possibly worth $10,000 an acre. A firm of any considerable size may have to pay six to ten thousand dollars a year in rental alone. But this is not all. Their help also lives on high-priced land and have to pay excessive rentals in consequence. Fifteen to twenty per cent. of the wages paid by commission firms, or thousands of dollars additional of their expenditures, really represents nothing but money that is in turn paid out by their employes to the city landlord.

These firms in turn sell their goods to grocers and fruiterers, who also are taxed in the same way. The indirect taxation, for that is what these rentals represent, forms a large part of the cost of doing business in the city, and when this cost is taken out of the selling price of the goods it helps to explain a large part of the difference between what the grower gets and what the consumer pays. There are other reasons besides this, such as excessive railway rates and express charges. This being the case, we will make more progress in settling the trouble of the middleman when we look into these matters and cease to lay all the blame at the door of the middleman. Taxing land according to its value would help to solve the difficulty.

The Ontario Vegetable Growers' Association is to be congratulated upon its decision to encourage the growing of seed potatoes in Northern Ontario. The great success that has attended the efforts of those growers in the north country who have gone in for the growing of potatoes has demonstrated clearly that the country is ideally adapted for the growing of this product. Under the favorable conditions that exist it should prove an unusually profitable crop for the growers. They have a practically unlimited market in older Ontario for all that they will be able to produce for many years to come. There is nothing to prevent the vegetable growers of Northern Ontario duplicating the great success that has been achieved by the potato growers of Maine and New Brunswick.

The outline given elsewhere in this issue of the splendid work accomplished by the flower guild in the city of Ottawa to arouse a greater interest in the growing of flowers among the young, offers many helpful suggestions to the officers of horticultural societies elsewhere in the province. While not every city is favored by having three such enthusiasts as Messrs. R. B. Whyte, W. T. Macoun and J. A. Ellis, still there are many centres which are fortunate in having thoroughly capable men and women who can duplicate the success that has been achieved in Ottawa if they will but make up their minds to put forth the requisite effort. By doing so they will put the whole community in their debt and accomplish results that will tell for good in the lives of others.

The directors of the Ontario Fruit Growers' Association made three thoroughly satisfactory moves at their recent meeting in Toronto when they decided to push more vigorously the matter of obtaining better treatment from the great transportation companies, determining to urge the provincial government to maintain a market commissioner in the western markets during the summer season, as is done by British Columbia, and in arranging to hold an orchard competition throughout the province. These steps are all in the right direction. Each is likely to be attended by far-reaching results. The provincial government should not hesitate for a moment in acceding to the request for the appointment of a market commissioner.

It is unfortunate that the province of Ontario is going to lose the services of Prof. J. W. Crow of the Guelph Agricultural College. It is time that the Ontario Department of Agriculture realized a little more clearly than it does that it must pay good salaries if it expects to hold good men. This latest loss draws attention once more to the penny-wise-pound-foolish policy adopted by the department a year ago, when it decided to try and save the salary of a resident director at the Jordan Harbor Experiment Station. The fruit interests of Ontario are of sufficient importance to warrant a more liberal expenditure, and it is to be hoped that the Minister of Agriculture for the province will soon recognize this fact.

Answers to Your Questions

"What style of sprayer is best suited to my needs?" "Who sells them?" "How much do they cost?" "What sprays should I use to produce the best results?" "When and how should they be applied?" "Where can I buy these preparations?" "How much do they cost?"

Many of you who read this special spraying issue of The Canadian Horticulturist are asking such questions as these. We have tried to answer them as far as possible, in some of the special articles appearing in this issue. These articles, you will notice, are by experts and they are timely, as practically all our articles are. There are a number of questions that, of course, we could not well answer in our reading columns. For answer to these questions, look through our advertising columns. There you will find the announcements of individuals and firms who handle goods such as you will need in connection with your spraying operations, and whom you will find not only ready to sell you their goods, but to give you much useful information on spraying and spraying machines that may be worth many dollars to you during the coming season.

Many of the advertisers in this number of the Canadian Horticulturist publish interesting booklets or catalogues, which not only describe the goods they have to sell, but give much valuable information as well. THESE BOOKLETS AND CATALOGUES WILL BE GLADLY SENT FREE OF CHARGE to all who are interested in the subject with which they deal.

Look through the advertisements in this number of the Canadian Horticulturist and write to those advertisers whose announcements interest you. They are using space in our columns because they believe they have something you want, and because WE BELIEVE THEIR GOODS ARE RELIABLE, AND THAT THEY WILL DO WHAT THEY PROMISE TO DO. Further than this, you may take advantage of our protective policy, given on the opposite page, if when writing advertisers you say: "I saw your 'ad'. in The Canadian Horticulturist".

We do not admit Advertisers to our Columns except such as we believe are thoroughly reliable.

PUBLISHER'S DESK

We hope that you will like this Special Spraying Number of THE CANADIAN HORTICULTURIST with its four-color process illustration on the front cover and its seasonable, instructive articles on spraying and other timely subjects. This is one of the special numbers that we told you last year we were planning to give you this year. While it does not equal our ideal by any means, still we trust it will be taken as a foretaste of still better things to come.

In our March issue the question of fertilizers will be given considerable prominence. Two instructive articles on this subject that will appear will include one entitled "What Tests of Commercial Fertilizers Have Shown," by Professor R. Harcourt, of the Guelph Agricultural College, and another, "Fertilizers for the Fruit Grower," by Mr. A. Bonar Balfour, of Port Dalhousie. There will also be articles dealing with spraying and pruning that will be helpful and practical.

In the floral department we expect to publish an article by Mr. E. I. Mepsted of Ottawa, giving timely, practical suggestions to the flower grower. One article sent in by Mr. Mepsted for our January issue reached us too late for publication. Mr. Mepsted was to have let us have an article for this February issue, but was prevented from sending it by illness. In the March issue we will publish another interesting description of a Canadian garden, which this time we expect will be located in Hamilton. There will be an article also entitled "Flowers for Shady Places," by Mr. Wm. Hunt, of the Guelph Agricultural College, and an article, "Vines for All Purposes," by Mr. F. E. Buck, of the Central Experimental Farm, Ottawa, whose interesting description of Mr. Whyte's garden appears in this issue. The Vegetable Department will also be full of interesting information. As usual, all departments will be profusely illustrated. Watch for our March Number.

Great preparations are being made also for our April issue, which will be our Gardening and Spring Planting Number. It will be crammed full of interesting articles for the amateur flower grower and will appear just at the season when plans for next summer's garden will have reached one of their most interesting stages.

This number of THE CANADIAN HORTICULTURIST is the largest number we have ever published, and while we are not yet able to secure full details, we believe this number sets a new high water mark not only in size but also in point of the value of advertising carried and in the number of paid subscriptions, which now number nearly 11,000. The fact that our January number showed an increase in value of advertising carried of over 55 per cent. as compared with the January issue of 1911 shows that advertisers are recognizing more than ever before that THE CANADIAN HORTICULTURIST is the one Canadian medium through which to reach fruit growers and others interested in general horticulture.

Our readers will notice the unusually large amount of spray and sprayer advertising appearing in this number of THE CANADIAN HORTICULTURIST. Practically every leading manufacturer of sprays and spray pumps doing business in Canada is represented in this number, there being in all nearly nine pages of this class of advertising. This special spraying number, therefore, contains not only several instructive articles on the subject of spraying, but also acts as a directory of firms who handle goods such as you are apt to require in connection with your spraying operations.

Vegetable Growers Active

The annual meeting of the Ontario Vegetable Growers' Association was held in the office of the secretary-treasurer, Parliament Buildings, Toronto, on January 9th. All the branches were represented.

The following officers were elected for 1912: President, Thos. Delworth, Weston; first vice-president, C. W. Baker, Tamblings; second vice-president, W. J. Kerr, Ottawa; secretary and editor, J. Lockie Wilson, Toronto; executive: Thos. Delworth, C. W. Baker, W. J. Kerr, J. Lockie Wilson, F. F. Reeves, C. N. Weaver; representative to Canadian National, Jas. Dandridge, Humber Bay; representatives to Horticultural Exhibition: Messrs Jos. Rush, F. F. Reeves, Thos. Delworth and Jas. Dandridge.

Arrangements were made to largely increase the quantity of seed potatoes grown for this association in northern Ontario. For the last two years experiments have been conducted by the vegetable growers, and the seed received from the northern country proved very satisfactory, and will, in the near future, take the place of the seed potatoes purchased from New Brunswick and several states of the Union. A large quantity of Early Ohio seed potatoes have been distributed among the farmers in the northern country.

Seed peas have also been successfully grown in northern Ontario. The price paid by the vegetable growers is now sixteen dollars a bushel. The Pea Weevil and Moth are unknown in the northern country, and peas grow very luxuriantly there. The association has decided to purchase a quantity of seed peas in Germany. These will be forwarded to the farmers in northern Ontario to be grown under contract for the members of the association. The price of these seed peas in Germany is fourteen dollars a bushel. The variety of these peas will be the Gradus.

Hon. Mr. Duff, Minister of Agriculture, attended the meeting and spoke encouragingly of the work that is being done by the association. The question of increased greenhouses at Guelph for vegetable growing was urged upon the minister, and also that fifty acres of the Monteith Demonstration Farm be planted with the different varieties of potatoes and peas and other garden crops. Hon. Mr. Duff agreed to give these matters the fullest consideration.

It pays to buy from firms who advertise in THE CANADIAN HORTICULTURIST. We vouch for their reliability.

Spraying is an insurance, but differs from an insurance policy on property, in that it is a protection to property, and will return handsome dividends annually upon the money invested, while an insurance policy involves the destruction of property to realize upon the investment.

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NIAGARA SPRAYS

NIAGARA LIME-SULPHUR has now been sold in Ontario for four years.

During these four years **NIAGARA** has never failed to demonstrate its merits, as an insecticide and fungicide.

It is to Niagara Spray and Niagara Spray alone that the increased interest has been taken in Fruit culture in Ontario.

NIAGARA SPRAY has made it possible to grow Apples and Pears free of worm or scab; Cherries and Plums, free of curculio, rot or worms; Grapes and other fruits, free of mildew, fungus, etc.

NIAGARA has made it possible to rid our orchards of San Jose Scale, Oyster Shell, Blister Mite, Aphis, Peach Leaf Curl, etc.

NIAGARA Sprays will not injure fruit or foliage. There is nothing in them to clog nozzles.

NIAGARA was the pioneer on the Pacific Coast, in New York State, and in Canada.

NIAGARA has made good, and because of our success others are following in our wake. Success always had a following.

NIAGARA is not an experiment.

NIAGARA is used and endorsed by the different branches of the Department of Agriculture, and by nearly every Fruit Growers' Association and prominent fruit grower in the Province.

NIAGARA Lime-Sulphur is absolutely clear and uniform, and carries the highest analysis. Every gallon is guaranteed.

Our **ARSENATE OF LEAD** (Swift's Brand) is the standard.
The aim of all manufacturers is to equal the quality of Swift's.

Swift's Arsenate of Lead is packed in 600, 300, 100, 50, 25, and 10 lb. solid oak packages. Smaller sizes in glass.

It is guaranteed to contain 15% Arsenic oxide. It mixes easiest with water, stays mixed, sticks and kills best.

This is the highest grade of Arsenate of Lead in the world.

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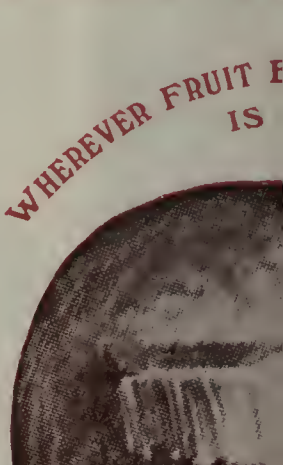

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We will send free o
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How to Use Them." I
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We are Specialists on Fruit Growers' Supplies. We devote our whole time and attention to this one line.
Trucks, Hand Pumps, Power Pumps, Tank Fillers, Folding Towers, High Pressure H

Our Motto Is: Best Quality, Best Tre

NIAGARA BRAND SPRAY CO.,

Our Other Factories: {NIAGARA SPRAY CO., of N.S., Kentville, N.S.
HOOD RIVER SPRAY MF'G. CO., Hood River, Ore.

BEAN SPRAY PUMP CO.,
NIAGARA SPRAYER CO., N

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If you were about to take out an insurance policy, either on your property or your life, you would not insure in a new or untried Company, but would select the old, safe, sure and reliable one. The Company that pays spray dividends or policies quickest, surest and best is NIAGARA.

POWER PUMPS

A good spray outfit is just as essential as good spray. We have given this feature our careful attention for years, and have worked out pumps that will run and with all troubles left out.

GIANT POWER OUTFIT—A 3-cylinder pump of great strength, power and capacity. It will spray 9 gallons per minute at 300 lbs. pressure, if desired. It can be operated with either a 2½ or 3½ h.p. engine.

NIAGARA POWER OUTFIT—A 3-cylinder pump of slightly less capacity, but the same high pressure. Operated by a 2½ or 3½ h.p. engine.

DUPLEX POWER OUTFIT—A 2-cylinder pump, medium priced, but with large capacity and high pressure. Operated with either a 1½ or 2½ h.p. engine.

All our pumps have porcelain-lined cylinders. They are noted for their durability, simplicity, high pressure and large capacity. All parts are interchangeable. Repairs cost practically nothing. Every part fits every other, and they can be immediately supplied.

Our power outfits are all mounted on steel frames—equipped with tank, tank filler, folding tower, and the highest grade of hose, aluminium-lined rods, nozzles, and cut-offs.

We have sold hundreds of power outfits in Ontario, and they have all given excellent satisfaction. We have great confidence in these pumps, and want to demonstrate them to you.

We will pay the Expenses to our Factory of any Fruit Grower in Ontario who intends to purchase a power outfit, and who will inspect our pumps before placing his order. He will be under no obligation to purchase from us. All we ask is that he purchase a power pump of some kind.

HAND PUMPS

MAGIC NO. 9—The largest hand pump made. One man can easily maintain a pressure of 140 lbs.

LITTLE GIANT NO. 70—The most powerful barrel sprayer on the market.

THE PIPPIN NO. 50—A strong barrel pump, made for smaller orchards.

Write for our Complete Illustrated Catalogue.

Ve have everything you need. Namely: Lime-Sulphur, Arsenate of Lead, Raw Sulphur, Gasoline Engines
e, Spray Rods (Aluminum or Brass Lined), Nozzles, Hydrometers and all Accessories.

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lleport, N.Y.

OREGON SPRAY CO., Portland, Ore.
MEDFORD SPRAY CO., Medford, Ore.

NIAGARA BRAND SPRAY CO. Ltd., Trenton, Ont.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

St. Thomas

"Our aim—to boost and beautify the city," is reported by the local paper to be the motto that has been adopted by the St. Thomas Horticultural Society. The receipts last year were $372.94 and the expenditures $358.08. The principal expenditures included: Prizes, $24; civic improvement, $98.28; lectures, $14.53; periodicals, $67.50; seeds and plants, $84.70; working expenses, $34.07; secretary, $35. The president is Dr. F. E. Bennett, and the secretary-treasurer, Col. E. H. Caughell. An effort is to be made this year to double the membership. A day will be named by the executive committee, when each member will be detailed a block or small district in which to canvass for members.

THE DOG NUISANCE

The dog nuisance was discussed at length and a committee was appointed to wait on the city council and request it to raise the fee on dogs to two and five dollars and, if they issue a by-law to that effect, to wait on the police commissioners and ask them to empower the police to slaughter all curs found on the street without their number and address. During the discussion of this subject Mr. A. W. Graham expressed the sentiments of a good many others when he said that he couldn't see why a "just plain dog" should have a greater privilege than a human being. "If a man or child should destroy, wholly or only partially, a flower bed, the owner would find redress in court, but a dog can commit the vilest depredations and there is no redress whatever. It is all right to keep a pet dog, but keep him on his own premises. He has no more right to run at large over a citizen's lot than has another man's chickens. If I had my way I would have every dog at the end of a chain, on the street or at home, where he belongs. He has no right to destroy property and should not be allowed to hinder the society in its work."

A NOVEL LEASE

Ald. Edgar Sanders said a new form of lease containing a clause to compel tenants to keep the grass cut, destroy weeds and keep their premises beautiful, horticulturally, would help the society materially in their work. He said the owners were in favor of such an idea and he could see no reason why the scheme could not be carried out. The matter was referred to the executive committee to act upon.

Weston

The Weston Horticultural Society last year, the first of its existence, did good work. In the spring it gave fifty cents' worth of gladioli bulbs to each member free. It also gave in May free to each member a copy of THE CANADIAN HORTICULTURIST till December. It held its first flower show in September. It was quite a success. The Society also awarded good prizes for the best gardens, lawns and flower beds. These prizes were keenly competed for. In October the society gave a free gift of fifty-one tulip bulbs to each member. There is a regular monthly meeting of the directors at which the welfare of the society and matters bearing upon horticulture are freely discussed. All the members who wish can attend these meetings. In October a special meeting was convened by the president, at which the High Park Rate-payers' Association affiliated with this society, thereby giving it a membership of five hundred and six, which will give the Weston Horticultural Society a great impetus for good.

Stratford

The Stratford society has decided to continue the policy introduced last year of making flower beds in various parts of the city. The society will also co-operate with the Extension Club and the Teachers' Association in securing Miss Miller, superintendent of the school gardens of Cleveland, to address a meeting in Stratford in March.

The city has been divided into districts and allotted to the various directors, who will make a canvass of the city for members for 1912. THE CANADIAN HORTICULTURIST is given free to each member.

Hanover

A new horticultural society has been organized in Hanover, Ont., with Daniel Luesing as president and John Mills as secretary-treasurer. The aim of the society is to beautify Hanover. Special attention will be devoted by the society for some time to improving the public grounds. Already the society has a membership of about seventy-five.

A Town Flower

At the last regular meeting of the Goderich Horticultural Society the pansy was chosen as the floral emblems of the town. A set of questions was formulated also for the use of members in the cultivation next season of dahlias with the intention of obtaining reliable data concerning this species in the vicinity of Goderich.

The Woodstock Society this year is giving its members premiums worth seventy-five cents. The members are being given their choice of a large number of premiums worth up to that amount in value.

Ornamentals for Home Improvement

When planning improvements for your home for next spring, think of how it would increase its beauty as well as its value to add a few more ornamental or shade trees, some flowering shrubs, or a perennial border.

We have this year a large assortment of ornamental stock of all kinds for you to choose from. Just now our list of varieties is practically complete. You who order early may be practically sure of getting just what you want. This stock is all in fine condition, and will please you when you get it. Our catalogue gives a detailed list of varieties with prices.

Plant Some Paeonies.

We have an unusually large supply of Paeonies, covering a wide range of varieties. A few of these lovely plants which do so well in almost any soil or locality will be welcome additions to your flower garden. Let us quote you special prices.

Fruit Trees.

We still have a good assortment of the leading hardy varieties of fruit trees, but they are going rapidly. Some varieties will soon be sold out. Orders should be sent promptly to ensure against disappointment.

Free Information.

Our Landscape Department will be pleased to advise you free of cost in regard to laying out, and planting your grounds, selection of varieties suitable to your soil and location, planning your perennial border, etc. Our booklet, 'More Beautiful Homes and How to Get Them," tells more about this department. Get a copy. It is free.

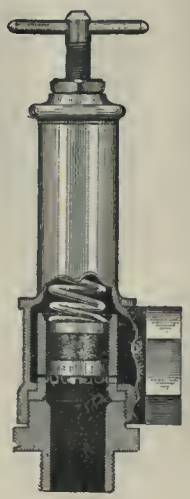
THE CANADIAN NURSERY CO. LIMITED

10 PHILLIPS PLACE, MONTREAL, QUE.

Designed Along New Lines

An End to Relief Valve Troubles

Removes the Greatest Source of Spraying Difficulties



Fits Any Sprayer

Permits Any Desired Pressure to be Carried

Wearing Parts Easily and Cheaply Renewed

THE "NATIONAL" RELIEF VALVE will at once appeal to all connected with the power sprayer business. It is a well known fact that the ordinary relief valve is the source of more trouble than everything else about the machine. The above cut shows how these difficulties are avoided in our new valve. Our descriptive circular will give you full information. Write for it and prices. Costs no more than the poor kind and attaches where other goes.

NATIONAL MACHINE CO.

BRIGHTON, ONTARIO

Quebec Vegetable Growers' Convention

The third annual meeting of the Quebec Vegetable Growers' Association was held at Cartierville, Que., January 17th. The delegates present were from some of the most progressive sections of the province, and represented some of the most successful market growers from their various localities.

The following officers were elected: Hon. presidents: Hon. F. D. Monk, Hon. J. E. Caron, J. W. Leverque, M.P.P. Hon. vice-presidents: G. A. Gigault, G. E. Dubord, Paul Wattiez, President, Anatole Decarie. First vice-president, Jack McEvoy. Second vice-president, James Clark. Directors: Prof. W. S. Blair, Camille Legare, Albert Monethe, Paul Wattiez, Joseph Decarie. Auditors: D. McMeekin, Father Athanase.

Mr. William Dreber, sent by the Quebec Association to visit the Ontario Vegetable Growers' Convention, read his report. This report was instructive and thorough. It brought home to the association the work attempted and accomplished in their sister province. It drew out a discussion concerning the Skinner system of irrigation. This system is new and fast coming to the forefront as the most successful system of artificial irrigation yet undertaken. The pressure is maintained by gasoline engine. From large pipes running across the head of the field, other leads of pipe are carried. At every four feet in the latter nozzles are placed, through which the water is projected. This water, falling back on the soil, imitates very effectually a rain storm, and thus robs the irrigation system of many undesirable features.

CELERY CULTURE

Culture of celery was the subject of M. D. McMeekin's paper. In this he outlined his method of caring for the plant from the time the seed is placed in the "flat" until ready for the field. Sturdy plants are what is sought, and what must be obtained if success with celery is reached. Successive transplanting develops the root system and this always goes hand in hand with stalwartness in the seedling. This system of transplanting is to be advised.

Mr. Thos. Delworth, representing the Ontario Vegetable Growers' Association, was in favor of the same method, repeated transplanting, with tomatoes. For early tomatoes three or four transplantings are not too many. Before going into the field he recommended that each plant should be placed in a berry box, one plant to the box. The rootlets are not disturbed when finally placed in the field. They thus recover from the shock of transplanting much sooner. Any fruit on the plant when "set" should be removed. It exhausts the plant in ripening the seed and discourages the formation of other fruit clusters. It is important to get the plant first and fruit later.

GOOD SEED NECESSARY

Mr. T. G. Bunting, of the Central Experimental Farm, Ottawa, was convinced that there were better methods which gardeners might follow if they would. Better seeds were very important. Seeds true to name, free of fungi and of a high germinating power must be obtained. The gardener may economize in fertilizers, in implements, in nearly everything if he must, but in seeds never. The best is the cheapest and none too good. He instanced several cases of seed obtained at a high price, which was not true to type. It is difficult in such cases to fix the responsibility. Whenever the thing is possible the home selection of seed is to be recommended.

Mr. A. F. Charron, M.A., of the Central Experimental Farm, Ottawa, both after-

Douglas Gardens

Oakville, Ontario

OUR 1912

Spring Planting List

NOW READY

describes and offers, amongst other good things:

ANEMONE JAPONICA, 4 varieties, at 15c. per plant.
CLEMATIS RECTA, at 20c.
DICENTRA (Bleeding Heart), at 15c.
GYPSOPHILA (Baby's Breath), at 15c.
HARDY GARDEN PINKS, 4 varieties, at 15c. per plant.
HEMEROCALLIS (Day Lily), 4 varieties, at 15c. per plant.
KNIPHOFIA (Flame Flower), at 20c.
SPIREAS, 8 varieties, at from 15c. to 35c per plant.
TROLLIUS JAPONICUS fl. pl (Globe Flower), at 15c.
YUCCA FILAMENTOSA, at 25c.
SHASTA DAISIES, 3 varieties, at 25c per plant.
GLADIOLUS, 14 named varieties, at from 4c. to 30c. per corm.
GLADIOLUS. Groff's Hybrids, unnamed, at 10 for 25c.
GLADIOLUS, Groff's Hybrids, a very fine light colored section, at 25 for 75c.
GLADIOLUS, Groff's Hybrids, red and scarlet section, at 25 for 60c.
ISMENE CALATHINA GRANDI (Peruvian Daffodil), at 20c. per bulb.

These prices include carriage to destination.

Also a fine assortment of China Asters, Antirrhinum (Snapdragon), Salvia. Stocks, &c., for Bedding purposes.

Mailed free to all on our Mailing List and to others interested who send names and addresses.

JOHN CAVERS

PEDIGREED NURSERY STOCK

OUR Trees are the high-class kind, produced on the finest fruit land in the Niagara Peninsula. We are ourselves extensive growers of Fruits and we know what the orchardist requires—stock true to name, of thrifty growth, carefully graded, well rooted, and last but not least, delivered in good shape. We grow and offer you this kind of stock, and are always glad to assist in selecting suitable varieties, etc. It will pay you to deal with a nursery that is thoroughly conversant with your needs.

AUBURN NURSERIES

QUEENSTON, ONT.

GOOD CROPS

ARE OBTAINED BY USING

THE BEST MANURE

AS SUPPLIED TO

NURSERIES, FRUIT GROWERS AND GARDENERS

SURE GROWTH COMPOST

makes poor land fertile, and keeps fertile land most productive. Supplied by

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Mention The Canadian Horticulturist when writing

FERTILE·VIRGINIA·FARMS

$15.00 PER ACRE & UP—EASY PAYMENTS

Productive soil, mild climate, fine water, good roads, close markets, unsurpassed school and social advantages. *Now, while you think of it,* write for the latest issue of "THE SOUTHERN HOMESEEKER," other literature and low excursion rates. Address F. H. LaBAUME, Agr'l Agt., Norfolk & Western Ry., Box 40 40 Roanoke, Va.

YEARLY RAINFALL 45 INCHES

Anything from a Berry Plant to a Shade Tree is waiting your order

No better stock or value offered than at the old reliable CENTRAL NURSERIES. We ship direct to customer with satisfaction. Send for priced catalogue before placing your orders. It will pay. If you have not had good results from others, TRY OURS—32nd YEAR. No agents.

The new hardy Hydrangea HILL of SNOW, a Beauty; the New Snow Queen Rose; Baby Rambler, in bloom all summer, by mail, 35c. each.

Apple, Pear, Plum, Peach and Ornamental Trees. Roses, Shrubs, Asparagus Roots, etc.

A. G. Hull & Son, St. Catharines, Ont.

Better tools mean bigger crops

The successful farmer and gardener works with the *best equipment*. The day of old-fashioned tools is past. On the best-tilled farms and gardens the world over, Planet Jr tools are doing the work.

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stands everywhere for the latest-improved, most useful and economical farm and garden tools. Products of 35 years' experience by a practical farmer and manufacturer who has made a scienc of tool-building. 55 tools; guaranteed.

No. 4 **Planet Jr Combined Hill and Drill Seeder, Wheel Hoe, Cultivator, and Plow** does the work of almost all garden tools combined. It sows accurately *all* garden seeds, cultivates, hoes, furrows, and plows. Indestructible *steel frame*.

No. 8 **Planet Jr Horse Hoe and Cultivator** does more kinds of work better, quicker, and easier than any other cultivator. Indispensable on the up-to-date farm.

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It's yours for the asking! And it's brimful of the most valuable farm and garden information. The latest tools for *all* cultivation shown. **Send postal for it today!**

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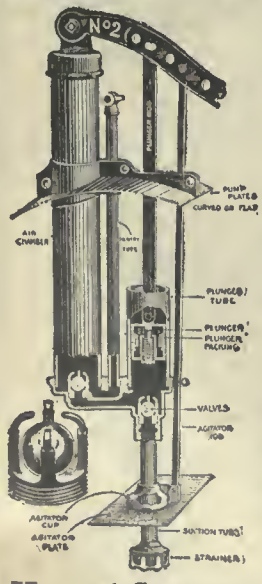
Write for name of our nearest agency.



Railways Use Spramotors

Mr. Leigh, Supt. of the N. Y. C. R. R. had 40 tons of cold water paint applied to the stock yards at Buffalo, using SPRAMOTORS.

This fact is more conclusive in favor of the SPRAMOTOR than columns of argument.

All Spramotors Guaranteed

SPRAMOTORS as shown in cut are hand operated, and can be used for Orchards, Potatoes, Painting, Whitewashing, Vineyards, or Weed Destruction. Two Gold Medals at National Horticultural Congress are Two Good Reasons. Ask for our free treatise on crop diseases, stating facts worth money to you.

AGENTS WANTED

SPRAMOTOR NOZZLES

Made to apply lime or whitewash.

Large liquid ways prevent clogging, and give perfect form of spray. Fully guaranteed.

With steel or brass removable discs.

PRICE $1.00

Can also be supplied in 2 or 3 nozzle clusters.

Heard Spramotor Co., 1387 King St. London, Can.

noon and evening spoke on the soil and its relation to crops, from the physical, chemical and bacteriological standpoints. He said in part, "The work of the market gardener is to produce quality and abundance. Quality is dependent upon size, succulence, aroma, absence of fibre and bitterness. To obtain these growth must be continuous, and this growth is possible only when the plant has room, air, heat and moisture. These conditions are best met on a deep, sandy, well drained loam. These physical conditions are not sufficient, however, for there must be an abundance of plant food in soil and available for plant use. Bacterial life plays a more important part in plant nutrition than many suppose. Lastly, and most important of all, is the soil moisture. Plants thrive almost in proportion to the soil moisture. They do not only need it in large quantities, but by bringing plant food in solution it makes possible its absorption by the plant."

Rev. Father Leopold spoke of the methods employed by French gardeners in the northern part of France. Under adverse circumstances and by hand labor all alone these gardeners have brought the culture of vegetables to a high state of perfection.

AVOID THE MIDDLEMAN

Mr. G. A. Gigault, representing the Department of Agriculture, Quebec, was much in favor of cooperation in this branch of labor as in all others. He pointed out that the producer obtained from 35 to 50 per cent of the selling price of his production, while the middlemen take the rest. This should not be. Every gardener should reap the full price of his labor. Cooperation would solve the problem. He was of the opinion that if a stock company was formed with a capital stock of seventy-five thousand dollars and warehouses rented or purchased in the large cities, in charge of a very capable man, that farmers would realize a very handsome profit by disposing of their produce through such an agency. He quoted much evidence to show that the proposition was workable, and capable of being made a great success. A committee was appointed to look into the matter. Messrs Jack McEvoy, Jos. Deguire and James Clark were appointed members of the committee. The name, "Agricultural Cooperative Society for the Province of Quebec," was suggested as a fitting name for the company.

The market growers in the vicinity of Montreal are among the best in the province. They only need to be convinced that the convention of vegetable growers is their own, and that it requires their presence, their enthusiasm and their help to make future meetings a still greater success. — E. M. S.

Ontario Fruit Growers' Association

A meeting of the directors of the Ontario Fruit Growers' Association was held in Toronto January 11th. The following officers were elected: President, D. Johnson, Forest; vice-president, J. W. Smith, Winona; secretary-treasurer, P. W. Hodgetts. The officers, with W. L. Hamilton, Lorne Park, and W. H. Dempsey, of Trenton, will constitute the executive committee for 1912.

The number of members on the transportation Committee was reduced, and the following appointed: W. L. Hamilton, Lorne Park; A. Onslow, Niagara-on-the-Lake; W. J. Bragg, Bowmanville; George French, Sarnia. This committee was instructed to engage a competent man to look after the collection of claims and to otherwise watch the fruit-growers' interests with the express and freight companies. It was felt

Beautify Your Home Surroundings

OUR CANADIAN GROWN

ROSES AND SHRUBS

Are Admirably Adapted to Enhance the Floricultural Pleasures of Canadian Homes

For $5.00

To introduce our high grade quality we will securely pack and **deliver PREPAID to any express office in Ontario** the following 25 two and three-year-old Nursery grown ROSES AND FLOWERING SHRUBS:

5 Climbing Roses, value $2.50.

1 Crimson Rambler.
1 Dorothy Perkins, shell pink.
1 Lady Gay, delicate pink.
1 Veilchenblau, blue Rambler.
1 Tausendschon, rosy carmine.

5 Hybrid Tea Roses, value $1.25.

1 Gruss An Teplitz, bright red.
1 Kaiserin Victoria, white.
1 Madame Testout, silvery rose.
1 Mamon Cochet, pink.
1 Le Progress, Golden Yellow.

5 Hybrid Perpetual Roses, value $1.25

1 Frau Karl Druschkki, white.
1 General Jacqueminot, brilliant red.
1 Magna Charta, bright pink.
1 Ulrich Brunner, cherry red.
1 Julus Margottin, glossy pink.

5 Baby Ramblers, value $1.25.

1 Madam N. Levavasseur, Pink B. Ramb.
1 White Pet. White Baby Rambler.
1 Mrs. W. Cutbush, Baby Dor. Perkins.
1 Perle des Rouges, Velvety Crimson.
1 Mosella, clear Yellow.

5 Flowering Shrubs, value $1.25.

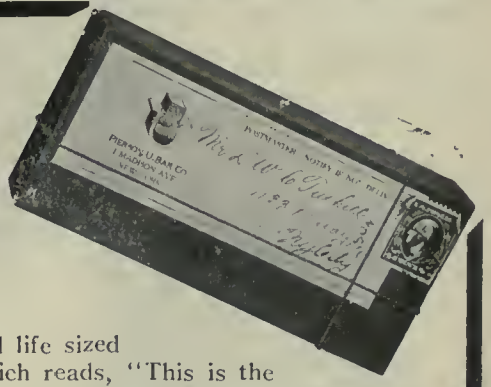
1 Hydrangea Paniculata Grand.
1 Althea, Rose of Sharon.
1 Deutzia, Pride of Rochester.
1 Weigelia, Eva Rathki.
1 Spirea Van Houttii.

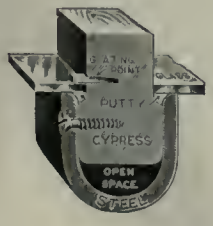
The above splendid collection delivered to you direct from our Nurseries at less than a third of Tree Agent's prices. Catalogue on application.

J. GAMMAGE & SONS, Ltd. London, Ont.

"Send It"

That's All You Need To Write





WE will mail you this green box.
Inside you will find a piece of the U-Bar—an actual life sized piece. Fast to it will be a tag, on one side of which reads, "This is the U-Bar, the bar that makes U-Bar Greenhouses the famous greenhouses they are," on the other side are the boiled down, straight from the shoulder reasons, **why this U-Bar** makes U-Bar greenhouses the famous greenhouses they are.

. The reason we are offering to send you this is because last spring when we were at the Boston Show exhibiting one of our houses, it surprised us every day to find the number of gardeners and superintendents who came to look at that house who hadn't the vaguest kind of an idea how the U-Bar was made. We determined right then and there, that we would cut up a thousand feet of U-Bars in short lengths and mail them out all over this country and Canada.

All you need to do to get one, is to mail us a postal with the words "Send It"—then sign your name and address and give the name of your employer.

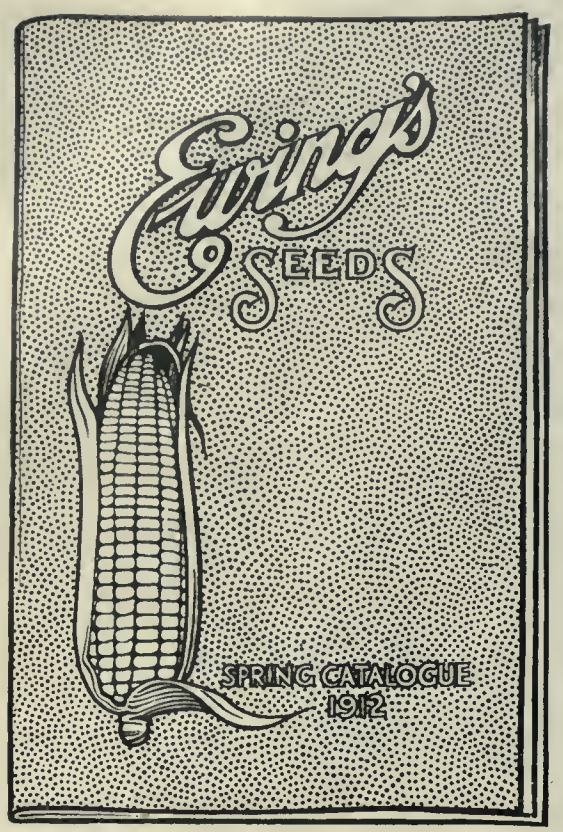
We will know what you mean and straight way the green box, containing the U-Bar will be mailed to you.

U-BAR GREENHOUSES

PIERSON U-BAR CO

ONE MADISON AVE., NEW YORK

CANADIAN OFFICE, 10 PHILLIPS PLACE, MONTREAL



Write for this

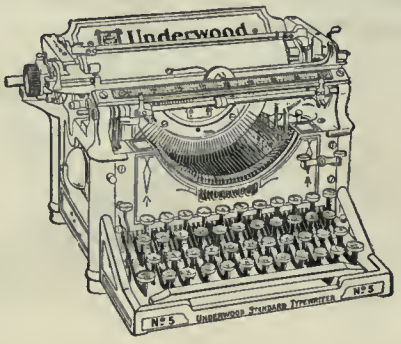
Illustrated Catalogue of EWING'S Reliable Seeds—

vegetable—flower—field root—field grain—grass — clover and ensilage corn.—Also fruit trees — small fruits — roses and other shrubs—bedding plants — fertilizers — insectides — garden tools — spraying appliances and poultry supplies. Mailed free for the asking. Address

WM. EWING & CO.,
Seedsmen, 20
McGILL ST., - Montreal.

Some History

about *Typewriters*



Modern and Ancient

CHAPTER 7

IN buying a Typewriter the price should be the last consideration.

YOU can buy cheaper typewriters than the Underwood, but if you pay less, you get less—a great deal less.

AN Underwood is worth what you pay for it—generally more. Its value depends not merely upon what it is, but what it does.

WHEN you buy an Underwood, you get more than the machine.

THERE is something which goes with the Underwood--included in every sale but not figured in the price--it is service.

IN a great many cases the time and labor saved by a specially devised Underwood system pays for the machine in a few months.

United Typewriter Co.
Limited
TORONTO

that fruit-growers had not secured the advantages from the decisions of the Railway Commission that were coming to them, and many thought this was due to the transportation committee not following up the decisions of the commission closely enough. The other committees were re-elected, with practically no change.

WESTERN REPRESENTATIVE

Hon. J. S. Duff, Minister of Agriculture, was present and was asked to give his attention to appoint a travelling representative for Ontario fruit-growers in the western market. British Columbia has such a representative and thus has an advantage over the eastern provinces. The Minister promised to give the matter consideration.

ORCHARD COMPETITION

It was decided to conduct an orchard competition for the coming season, the province to be divided into districts, and suitable awards to be given for the best orchards in each district. This competition will be carried out for four years, awards, however, to be made yearly, with final awards for the orchard making the best showing for the full period, at the end of the fourth year.

Many changes were made in the prize list for the apple show to be held next November. Prizes will be offered for half carloads and 50-box lots of Spy, Baldwin and McIntosh. Some of the varieties now on the list will be eliminated, so as to still further reduce the list of kinds that are recommended for Ontario planting. This is in accordance with modern orchard practice.

At the close of the directors' meeting, the representatives of the Dominion Conference, who were appointed last November, met and decided on the action to be taken in connection with the various resolutions which were forwarded to Ottawa. Certain of the committee were allotted to bring forward each resolution, and will secure the necessary data.

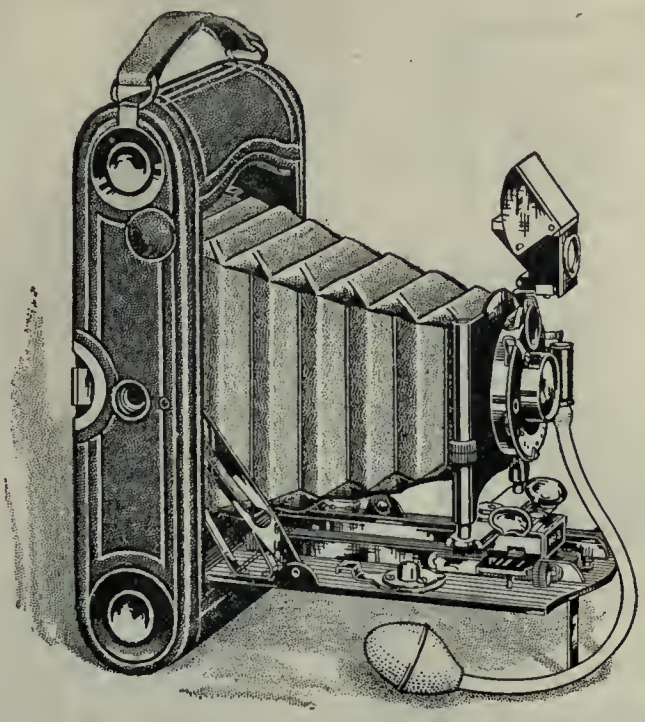
About fifteen years ago the fruit men of the Annapolis Valley commenced to build apple warehouses on the railway line. There are now over ninety of these in the Valley with a total capacity of perhaps eight hundred thousand barrels. Counting a couple of large additions, equivalent to new ones, twelve of these were erected during the past year.

The Kootenay Fruit Growers' Union has been shipping single boxes of apples to points in various parts of the world. One box was shipped to Switzerland, two to New York, one to Paris containing four different varieties of apples, Cox Orange Pippin, Yellow Newton, Spitzenberg and Northern Spy. This is being sent as a result of a visit paid to the warehouse of the union recently by a Parisian banker who was astonished at the perfect color and quality of the Kootenay apples.

Numerous Inquries

"As it must be gratifying to you as well as to us, we wish to mention that we are receiving numerous inquiries from our advertisements in THE CANADIAN HORTICULTURIST." — German Potash Syndicate, Toronto.

The above firm has used large space regularly in THE CANADIAN HORTICULTURIST for several years to advertise their fertilizers to fruit growers. They find it pays. Perhaps you have something that fruit growers want.



There's a profit side as well as a pleasure side in *the use of a*

KODAK
ON THE FARM

Pictures of stock that you have to sell, pictures showing the development of animals at a certain age, of crops at a certain stage of growth, of buildings, and of ditches and fences and roads—all these can be used to advantage in systematizing and making your farm profitable.

Pictures of your family and friends, pictures of the places you visit and the things you and your family are interested in—these will add to the pleasure of home life for all the household.

And *you* can make such pictures.

The operation of a Kodak requires no technical knowledge. The little book that accompanies each camera tells how to take the pictures, how to develop the negatives and how to make the prints, all in a simple way that the beginner can easily understand. And by the Kodak system there's *no dark-room* for any part of the work.

Ask your dealer or write us for illustrated Kodak catalogue—free by mail

CANADIAN KODAK CO., LIMITED, TORONTO, CAN.

SPECIAL GUARANTEED

Lime-Sulphur Hydrometer

Both specific gravity and Beaume readings; submitted to Mr. Caesar O. A. C., Guelph, and reported "quite satisfactory."

Sent Postpaid on receipt of 80 cts.

PARKE & PARKE Wholesale Druggists HAMILTON, ONT.

Aphine

The Insecticide that kills plant Lice of every species

$2.50 per Gallon; $1.00 per Quart.

Dupuy & Ferguson, Montreal, Can.

Strawberry and Raspberry PLANTS

All the Leading Varieties

HOME GROWN

Send for Catalogue and Price List

C.P.NEWMAN

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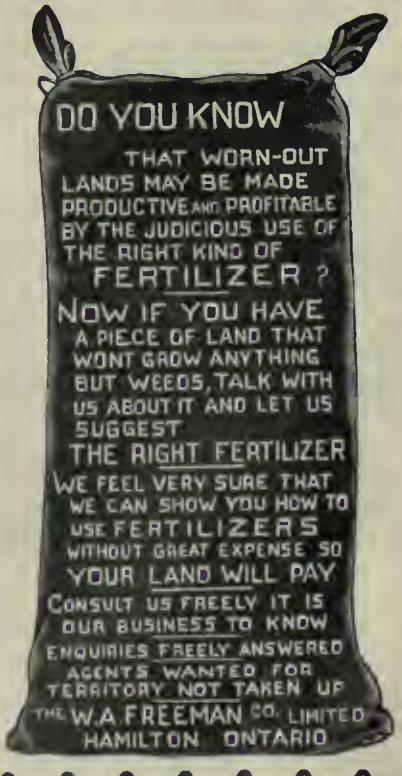
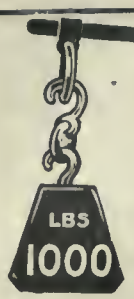
Lachine Locks - Quebec

Fertilize Your Lands





INTERNATIONAL STOCK FOOD
is a splendid Pork Producer

The successful hog-raiser is the man who bends every effort to prevent disease and—KEEP HIS HOGS HEALTHY.

He provides his hogs with warm, clean quarters—and adds a little "INTERNATIONAL STOCK FOOD" to every feed.

This wonderful tonic keeps the blood pure—regulates the bowels—makes the animals eat well—and thus fortifies them against those banes of the breeder—Hog Cholera and Pneumonia.

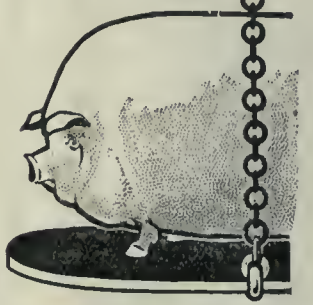
3 FEEDS for ONE CENT

You can easily raise "Fall Pigs" and have them fine and fat for the market in May or June, if you feed "INTERNATIONAL STOCK FOOD."

Your sows will raise TWO GOOD LITTERS of strong healthy pigs EACH YEAR if you feed INTERNATIONAL STOCK FOOD. For fattening pigs for market, at the rate of a to 3 pounds extra a day, there is nothing in the world to compare with it.

The big hogs—prize winners, weighing from 500 to 600 pounds—are regularly fed "INTERNATIONAL STOCK FOOD." Why don't you feed it and make more money out of your hogs? 3 Feeds for one cent. For sale at all Dealers.

65



International Stock Food Co., Limited, Toronto

SPRAMOTOR SAVES TREES

Two carloads of the Traction Spramators were shipped to Waterdown and Burlington last year.

The farmers there prefer them to all others for general purposes

They are well adapted to spraying fruit trees of any size, and by a simple change of spray pipes, are equally suitable for vineyards, row crops and weed destruction.

The greatest care is taken in their manufacture, as they are most difficult machines to manufacture

They have all the features of the large power machines, and in addition, have a Nozzle Protector, Patented Nozzle Adjuster, 12 gal. Air Tank and a motor of the largest capacity: yet owing to the control, one nozzle can be used as effectively as 12 (the limit) and yet maintain an equal pressure of from 80 to 200 lbs., or any pressure you desire.

All of the highest grade throughout.

Everything in its construction made in the Spramotor Factory.

HEARD SPRAMOTOR CO.

1388 King Street, London, Canada

Park Commissioner

For TORONTO, Ont.

Applications for the above-named vacant position will be received by the undersigned. Applications should be accompanied with fxll particulars as to applicant's ability and experience, with testimonials, etc.

G. R. GEARY (Mayor), Chairman Board of Control

CITY HALL, TORONTO

The Late Charles Arnold

On the editorial page of the July issue of THE CANADIAN HORTICULTURIST, acting upon the suggestion of one of our subscribers in British Columbia, we inquired for information about the late Charles Arnold, of Paris, Ont. the originator of the Ontario apple, the merits of which are becoming better understood as the years pass. The inquiry led to our locating one of his daughters, Mrs. E. W. Moyle of Langstaff, who has kindly furnished us with the following particulars about her father's work. Mrs. Moyle writes:

The Late Charles Arnold

It is with a great deal of pleasure, after thirty years, to have inquiries made regarding my father's work. The late Mr. Chas. Arnold of Paris spent many years hybridizing and I can safely say he was among the first, if not the first, in Ontario to put some of his own varieties on the market. His earliest experiments were with roses, in which my youngest brother was interested, but he did not live long enough to continue the work, so father carried on the work alone. Some of his varieties of grapes are still grown in France, their hardiness enabling them to withstand the ravages of the Phloxera better than the native stock. Among these are the Othello, Cornucopia, Antuchon, Brant and Canada.

A few varieties of raspberries were also originated, among them a white one considered pretty good, but, as Dr. Beadle said in a late article, "it was apt to revert to the original Antwerp." In 1872 Mr. Arnold gained the gold medal at the Hamilton Exposition for a new hardy wheat.

A gentleman living near Paris told me a few weeks ago that he grew some of this wheat for seed for father. One of his most successful ventures was a hybrid pea known now as "Bliss' American Wonder." The statement has been made that he received $2,000 for it, but this is a mistake, as Mr. Bliss gave father $1,000 for a bushel, and then wrote him a very kind letter saying he thought he had not paid enough and forwarded a beautiful gold watch. At the time of his death he was working on a new pea which was never put on the market but grown by members of his own family.

His apples, of which there were four, were shown at the Royal Horticultural Society of London, England, and for these he received a bronze medal and certificate of honor, highly prized by the family. The apples were "Arnold's Beauty," "Ella," "Dora" and "Ontario." The last one was chosen by the Ontario Fruit Growers' Association for distribution among the members, Mr. Arnold being a life-long worker in the association.

This apple was a cross between the Spy and Wagner and is still grown in Canada. This was not his favorite, as he considered Arnolds Beauty a much finer dessert apple, but not so showy as the Ontario or as good a shipper. The "Ella" and "Dora" are little known, but Arnold's Beauty are still grown in several orchards around Paris. This is but a short sketch of my father's special work, but if this is not sufficient Dr. Wm. Saunders of Ottawa, who was a life-long friend and knew more about his work than almost any other might give additional information.

I remember hearing father say once that

102 Metal Shingle and Siding Company, Preston, Ontario:—
Send me, FREE and POSTPAID, a copy of the new edition of "TRUTH about ROOFING," and tell me how to protect my buildings against lightning.

My name is .....

Postal address .....

Province .....

Please be sure to all in name of paper.

I clipped this from

You may quote me price on about ..... square feet of Preston Shingles without obligating me to anything.

Use this coupon and learn about the improved complete metal roofing

Postpone your intended purchase of ANY roofing until you have used that coupon. For the facts it will bring you about the new Preston Lightning-Protection Specification and Guarantee will almost certainly induce you to roof with

The improved Preston Specification assures you the ONLY roofing which is actually COMPLETE as a protection against ALL the elements. Not only weatherproof, waterproof, windproof, rustproof, fireproof, BUT — actually LIGHTNING PROOF. Your buildings will never suffer damage from the electric blast that causes so much destruction. They will be safe if roofed with Preston Shingles as we tell you how.

Make Your House, Your Barn Really Safe Against Lightning.

Adopt Preston Shingles and have no fear of the weather. Once on, they need no paint, for the thick galvanizing on the heavy metal withstands even the British Government acid test. They won't work loose in heavy winds, for the four-sided Preston Safe Lock holds every shingle rigidly in place. Fire nor water can't damage them. And with the new improvement, LIGHTNING WILL NOT HARM ANY BUILDING THEY COVER

Learn About our Guarantee Against Lightning Damage.

The edition of 'TRUTH ABOUT ROOFING' is limited. You need to act now to be sure of getting a copy. Use the coupon now.

PRESTON SAFE LOCK SHINGLES

Each improvement in metal shingles has made even the cheapest of other kinds of roofing material costly by comparison. Now comes the Preston Specification, the improved Preston Shingles, the perfect way to put them in place, and thus you can have the ONE really COMPLETE roof. You certainly should learn all about it at once—and the FREE book the coupon will bring you informs you fully on roofing facts worth money to you. Use the coupon, and let us send you the book right away.

The FREE book we ask the privilege of sending you explains NEW roof-facts of much importance to you, whether you intend to erect new buildings or repair and improve old ones. You will be speedily convinced that Preston Shingles are the roofing you can best afford.

C. Dolph
MANAGER

Metal Shingle and Siding Co., Ltd., Preston Ontario

Branch Office and Factory: Montreal, Que.

Are You Setting Out Your Trees as Economically as Possible and are the Trees when Planted Giving The Best Results Obtainable ?

Let Us Send You FREE OF CHARGE our Pamphlets on the use of

STUMPING POWDERS

USED FOR

Planting Trees
Cultivating and Rejuvenating Orchards
Breaking Hard Pan, Shale and Clay Sub-Soils
Removing Stumps and Boulders
Digging Wells and Ditches, Etc., Etc.

Write us in regard to arranging
FREE DEMONSTRATION

CANADIAN EXPLOSIVES, Limited
MONTREAL, P. Q.

The ONTARIO FRUIT SPRAYER
BUILT FOR BUSINESS

Fig. 73 No. 1 A, 1912 Model

This cut illustrates our **1912 MODEL FRUIT SPRAYER,** a marvel of simplicity, strength and durability, 2½ H. P. engine, water cooled and always ready; can be quickly cut off from pump jack and used for other purposes. This outfit represents all that first-class machinery, material and skill can produce at a moderate price. Write for detailed description and price. We manufacture a full line of Apple Evaporating Machinery.

Installing Power Evaporators a Specialty

FRUIT MACHINERY CO. - Ingersoll, Ont.

out of one hundred varieties of strawberries he had grown he rejected all but one, showing how uncertain the returns were for his labors. Page twenty-eight in the report of the Ontario Fruit Growers' Association for 1881 gives an account of father's opinion on apples, in which he speaks of his favorite "Arnold's Beauty."

That there is a wide field for this class of work in Canada is very evident, and if some person thoroughly in love with hybridizing were to take it up with patient, persistent effort I am convinced it would not only bring him some degree of fame but substantial monetary returns also.—Mrs. E. W. Moyle.

A Boom in Norfolk

A great boom is taking place in the fruit lands in Norfolk county, Ontario. The Ontario Fruit Lands, Limited, a Toronto company organized by G. R. Cottrelle, manager of the real estate department of the Union Trust Company, bought a tract of one thousand acres last April. This land, which is now known as the Lynndale Farms, is to have all its inside fences removed, leaving the large block with only a boundary fence. Mr. Paul E. Angle, who gained a reputation in his work as district representative in Simcoe of the Department of Agriculture, has been appointed manager.

The land was bought purely for investment purposes. It will be planted with fruit, principally apple and peach trees. Since taking possession of the land last summer, seventy-five acres of apples and peaches have been planted and the ground prepared for planting four hundred acres more next spring.

The nursery stock for the spring planting has been purchased and comprises the varieties of apple and peach trees that have been proven to produce most abundantly in that district and command a good price. It is the intention of the company to have the entire thousand acres planted in fruit trees as soon as the ground can be put in shape and the stock procured. The young trees will be cared for until they commence to bear profitably, when it is believed the land may be sold to settlers from other fruit-growing parts. The planting is all to be done in such a way that at a future time any sized parcel may be disposed of.

The "Norfolk Publicity and Development Board" has been formed in Norfolk county, Ontario, to advance the agricultural and industrial interests of the county. It is composed of leading residents of the county. The officers are: President, H. H. Groff; vice-president, H. P. Innes, ex-M.P.P.; secretary-treasurer, J. E. Johnson, manager of the Norfolk Fruit Growers' Association; committee, G. J. McKie and J. E. Smith. The formation of this organization indicates that old Ontario is beginning to awake and to join in the effort to catch some of the attention of the busy world.

The prospectus of a new company, the Dominion Western Bonds Corporation, is being advertised in London, England. It has a capital of $1,000,000. Four British M.P.'s are on the board, Col. Hickman, Sir Gilbert Parker, Hon. E. S. Montague and J. L. Baird. The object is to acquire and develop farm and fruit estates in the Dominion, especially in the Kootenay and Okanagan, Cassiar and Cariboo districts, British Columbia.

I recommend THE CANADIAN HORTICULTURIST to my friends, as the pictures are fine, the print readable, the plans are practicable, and the advertisements O.K.—W. T. Winchester, Winona, Ont.

Grasselli Spray Products

LIME - SULPHUR SOLUTION

ARSENATE OF LEAD PASTE

Grasselli Lime-Sulphur Solution contains the maximum amount of Sulphur in Solution as Calcium Polysulphides. It is a clear solution, free from sediment. By its use nozzle troubles are eliminated and maximum distribution is attained, which in a word means efficiency. It puts money in the pocket of the Fruit Grower who uses it.

Grasselli Arsenate of Lead Paste, an even balanced product, contains 15 % of Arsenic Oxide combined with the maximum amount of Lead consistent with good mixing properties.

Kills All Leaf-Eating Insects
Sticks to the Foliage

Mixes Easily with Water
Does Not Injure the Foliage

Grasselli Spray Products are manufactured under rigid guarantee. Complete analysis on each package.

Distributors wanted in unoccupied territory **Send Inquiries to the Toronto Office**

THE GRASSELLI CHEMICAL CO., LIMITED

Head Office and Works:
HAMILTON, ONT.

Warehouse and Office:
131 Eastern Ave., TORONTO, ONT.

Tree Protected by Wooden Veneer and banked up with earth to prevent entrance of pests at bottom.

PROTECT YOUR TREES

Against Rabbits, Mice and other Vermin

Many young orchards are greatly injured each year by these pests. Wrap the trunks with

WOODEN VENEERS

and damage will be prevented. These veneers will protect also against sun-scald.

Send At Once to

The Oakville Basket Co.

OAKVILLE, ONTARIO

THE

Weekly Fruit Grower

MARKET GARDENER AND POULTRYMAN

Published at Grimsby, Ontario

The only weekly paper in Canada devoted entirely to Fruit Growing, Market Gardening and Poultry Raising.

It deals in its season with every phase of **COMMERCIAL FRUIT GROWING** and **MARKET GARDENING.**

Pruning, Spraying, Thinning, Fertilizing, Cultivating, Picking, Packing, Shipping, Marketing and Storing discussed by men of experience and writers of ability.

Subscription Price, **$1.00** per year.

SPECIAL CLUBBING PRICE

Clubbed with The Canadian Horticulturist only **$1.20 a year** for both papers. Regular price $1.60.

If your subscription expires this month take advantage of this offer when renewing. Send orders to

The Canadian Horticulturist

PETERBORO - - - ONTARIO

Gladioli

GLADIOLI are now the most popular of summer flowers, nothing being equal to them for table decoration. We have a large stock of the best varieties and most valuable mixtures.

Groff Hybrids are still the best we can find and they are making their way all over the world, **seven or eight acres now being grown at Simcoe,** largely for export. **Also Cannas, Dahlias, Paeonies and General Nursery Stock.**

CATALOGUE on application to

Campbell Bros. Simcoe, Ont.

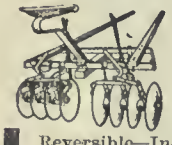
Strawberry Plants
FOR SALE

We have a fine lot of plants for spring delivery. Best varieties for home, garden and commercial growers. List will be ready early in January. Send for it now.

Place your order early as
PLANTS ARE SCARCE

ONTARIO NURSERY CO.
Wellington, Ont.

The Bissell
GARDEN HARROW



By adding wings to the Bissell Garden Disc harrow it extends over 10 ft. wide. With wings detached it is 4 feet wide. Adjustable—single horse, or light two-horse harrow. Low or high seat. Reversible—In-throw to Out-throw. Cuts clean, even furrow and is a strong, durable Harrow. Call on local dealer or write Dept. N for catalogue.

T. E. Bissell Co., Ltd., Elora, Ont.

See ad. of Orchard Disc on page 56

Montreal's New Suburb

When the work planned by the Canadian Northern Railway is completed a model town will have risen behind Mount Royal. The company has secured the services of Mr. Frederick G. Todd, landscape architect, to prepare plans for a new suburb on a part of the railway property, which embodies an area of about five thousand acres. At present not more than three thousand acres will be developed in this manner. The balance will be retained for future developments and yards.

The project is of particular interest to Montreal since it is the first time in Canada that a large suburban area has been designed on the thoroughly scientific lines of modern city planning. In addition it is a most ambitious program, for the site which will be prepared is over twice as large as Westmount. The southern lines of the "Garden City" will adjoin Outremont.

When the work is completed the Canadian Northern Railway will enter the Island of Montreal a little to the west of the C.P.R. entrance. At this point the use of steam as a motive power for its engines will end and big electric motors of the most modern type will be provided, the third rail system being adopted. The line into the city will run from the Black River to the rear of Mount Royal, then, through a tunnel beneath the mountain, to its downtown terminal. A suburban service similar to that of New York will be provided, so that anyone may reach the centre of the city from the centre of the new suburb in from six to eight minutes. The tracks will be elevated and stations established at frequent intervals.

Mr. Darling, the Montreal manager of the Land Department of the railway, and Mr. Todd have studied the property carefully. They feel confident that the new suburb will be the model city of Canada, and will prove a financial success for its owners.

Items of Interest

Mr. Frederick G. Todd, landscape architect, of Montreal, Canada, has severed his connection with the Canadian Nursery Company, Limited.

Prof. J. W. Crow, B.S.A., of the Ontario Agricultural College, Guelph, where he has done good work, has accepted a position as superintendent of the Dominion Experiment Station instituted last year at Kentville, Nova Scotia, by the Dominion Government, where he will remove at an early date. The new institution is devoted to investigation and demonstration in the problems of fruit culture. The site was procured last year, and some initial work done under direction of the Dominion Horticulturist, Prof. W. T. Macoun, but plans will now be fully matured and pushed under the superintendence of Prof. Crow.

Prof. Taft of Michigan states that they are having trouble there with Little Peach, which has been unusually prevalent with them this season. He states that it has obtained such a foothold in Michigan that he fears it will be difficult to control it. It is just possible that the season we have experienced has been such as to bring out the worst features of the disease and that an ordinary season will be not quite so bad. This we cannot count on, however, and we must do everything possible in our power to fight it without counting on the seasons.

Imperial Bank
Established 1875 OF CANADA
HEAD OFFICE TORONTO

Capital Paid-up.	6,000,000.00
Reserve Fund	6,000,000.00
Total Assets	72,000,000.00

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Roses-Shrubs-Vines
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Everything for the garden and lawn. Get my catolog and prices before you order.

IT WILL PAY YOU
A. W. GRAHAM
16 Margaret Street
St. Thomas, - Ontario

FERRY'S SEEDS

Plant breeding and selecting has been our business for years. We market the results in the shape of thoroughbred vegetable and flower seeds. They grow good crops.

1912 SEED ANNUAL FREE ON REQUEST

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From COAL OIL (Kerosene)

Recent test by Prof. McKergow, McGill University Montreal, on leading oil-burning lamps show the Aladdin Mantle Lamp gives over **twice as much light** as the Rayo and other lamps tested, and burns less than one half as much oil. It is odorless, safe, clean, noiseless. Better light than gas or electric. Every Aladdin Lamp fully guaranteed and protected by patents in nearly every country on earth. Our burners fit your old lamps.

To introduce the Aladdin, we will give

ONE LAMP or BURNER FREE

in each neighborhood. Send postal with name and address, ask for cat alogue M. **AGENTS** Ball sold over 1000 on money back guarantee; not one returned. Bruner sold $800 in 15 days. Ask for liberal agency proposition. Sample lamp furnished.

MANTLE LAMP CO., of America, Inc., 192 Aladdin Building, MONTREAL, QUE.

Gerhard Heintzman Pianos
Pianos of Prestige

NO NEED TO WORRY

To worry about your purchase of a piano is needless.

Someone else has taken the worry from the piano question for thousands of buyers as eager to buy rightly as yourself.

The makers of the

GERHARD HEINTZMAN

CANADA'S GREATEST PIANO

have eliminated risk and accentuated the possible enjoyment from the possession of a piano. A generation is a long time—but a generation has proven the supremacy of this really great piano.

If not in the city to see the instruments for your self, send for the complete descriptive booklet

YOUR PRESENT INSTRUMENT TAKEN IN EXCHANGE.

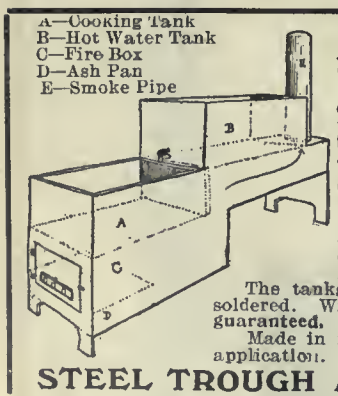
GERHARD HEINTZMAN

41-43 Queen St. W. (Opposite City Hall)

TORONTO

New Sale Rooms in Hamilton:
68 King St. E. (next Post Office)

Write for name of our nearest agency.



Make Your Own Spray

Home Boiled Lime Sulphur is being used in increasing quantities by leading fruit growers and fruit growers' associations. They find that by making their own spray they can effect a considerable money saving, and at the same time produce a preparation that will do the work thoroughly.

It is an easy matter to make home boiled lime sulphur. The chief essential is a proper spray cooker. We manufacture two kinds of cookers, one with a single tank, and one with a double tank. (See illustration.) They are designed especially for this purpose, and will give the greatest efficiency with the greatest saving of fuel. They can be used for either wood or soft coal.

The tanks are made of heavily galvanized steel, thoroughly rivetted and soldered. Will not leak. They are built to give satisfaction, and are guaranteed.

Made in five sizes, capacity 30 to 75 gals. Prices and full particulars on application. Get your outfit now. Write us to-day.

STEEL TROUGH AND MACHINE CO., Ltd., TWEED, Ont.

SPECIAL GUARANTEED

Lime-Sulphur Hydrometer

Both specific gravity and Beaume readings; submitted to Mr. Caesar O. A. C., Guelph, and reported "quite satisfactory."

Sent Postpaid on receipt of 80 cts.

PARKE & PARKE Wholesale Druggists HAMILTON, ONT.

STRAW BERRY PLANTS
RASP
BLACK
ALSO SEED CORN
GIBRALTAR BLACK CAP
Greatest Yielder at Experimental Farm, Ottawa.
Address originator: N. E. MALLORY, BLENHEIM, ONT.

BOOKS WRITE for our list of books on Fruit Growing, Irrigation, Pruning, Spraying, Fertilizing, etc.

PROVINCIAL NOTES

Eastern Annapolis Valley

Eunice Buchanan

During the month of September, from Berwick alone, thirty-one thousand barrels of apples were shipped. They are reported to have made good prices in England. Mr. S. B. Chute, manager of the United Co-operative Fruit Companies of the Annapolis Valley, chartered three steamers, one, the S. S. Taunton, carried ten thousand six hundred and sixty barrels to London; another, the Salvators De Giergis, sailed for Glasgow with ten thousand barrels, while the Michigan took the same number to Liverpool. Fruit growers are rejoicing over their new independence.

Many orchardists greatly underestimated their crops, and barrels could only be obtained by waiting. Coopers were imported with staves and hoops from Ontario, thus introducing the flat-hooped barrel, whereas before they were made of split birch saplings. The evaporator at Middleton was burned down. Fall plowing has been going on up to date, Nov. 13. The plowing of one land and leaving the next is coming into favor, and the tendency is not to cultivate so near to the trees.

Nova Scotia Awakening

The past year has shown some wonderful developments in the fruit industry in this province. The production of apples last fall was much the greatest on record, amounting to almost one and a half million barrels. Some extremely interesting information regarding our production of apples was published recently in local papers from the pen of one of our most successful growers, Mr. R. J. Messenger, one of the well known contributors from this province to the columns of THE CANADIAN HORTICULTURIST. Speaking about the quality of the fruit grown, Mr. Messenger says: "Our great crop did not consist of poor, wormy, third-class apples. They were as good, both in quality and appearance, as could be raised under the same circumstances in any part of God's earth."

The increase in our production of apples is well shown by the following table of exports prepared by Mr. R. S. Eaton and showing the average number of barrels exported each year for five-year periods:

	Barrels
1880-1885	23,930
1885-1890	83,249
1890-1895	118,552
1895-1900	259,200
1900-1905	330,406
1905-1910	482,298

By 1920 we expect to produce three or four million barrels a year.

A thousand-barrel crop this year in Nova Scotia was a common occurrence. There were many five thousand-barrel yields and some climbed to nearly ten thousand. Men who, twenty years ago, the great majority of people in the Province, thought crazy for planting over twenty-five acres of orchard, to-day are smiling blandly as they pocket from two thousand to ten thousand dollars as the year's orchard income.

One of the most encouraging facts in this year's business has been the successful trade with the West. We have thought that we could never compete with Ontario and British Columbia in sending fruit to the West, but this year has been a pleasant surprise in that about 100,000 barrels have

Feed Your Fruit Trees and Gardens

Practical Fruit Growers and Vegetable Gardeners realize that to obtain the largest profits from their land **it is just as necessary to fertilize their trees as it is to spray them.** We manufacture brands of Animal Fertilizer especially designed for the use of Fruit Growers and Market Gardeners. Some of our brands that are specially suitable for these purposes and their guaranteed analyses are :

BRAND	GUARANTEED ANALYSIS		
	Nitrogen	Phos. Acid	Potash
Potato Special	3.30	8	8
General Vegetable and Market Garden	4.11	9	5
Early Vegetable Manure	4.93	9	5
General Crop Fertilizer	2.47	10	2
Fine Steamed Bone	4.93	22	—
Sol. Bone and Potash	1.64	10	5
Tobacco Grower	4.11	9	6
Greenhouse Special	4.11	5.5	5

Remember our brands are based on materials of animal origin and are not purely chemical fertilizers. The effect is therefore more permanent and the plant foods not so liable to loss through leaching, etc. The advantages are all outlined in our **Fertilizer Booklet. Send for one.**

Our Fertilizer Department is under the management of a graduate of the Ontario Agricultural College and of Macdonald College, Que., who is well qualified to advise you regarding fertilizers suitable for your soil and the crop for which it is required He will be pleased to give any information possible on this subject.

Write for literature and quotations. We have agents in some sections and want men for others. Easy terms and satisfaction guaranteed to our patrons. Orders by mail promptly filled—no extra cost. Write:

Wm. Davies Co.

521 Front Street East **Limited.** **Toronto, Canada**

GO TO
BATTS LIMITED FOR HOT-BED SASH

PROFIT AND PLEASURE IN GROWING EARLY VEGETABLES AND FLOWERS IN HOT-BEDS

The money saved in growing your own vegetables and flowers. saves the cost of the beds the first year. Our Hot Bed Sash are built to last. All the joints are tight fitting, blind mortised and white leaded before being put together. A ½ inch oak rod runs through the bars and into the stiles. A metal pin is driven into each of the bars and styles through the rod. In this way each bar is held in its proper position and prevented from sagging.

A trial order will convince you that our sash possess the greatest possible strength and durability.

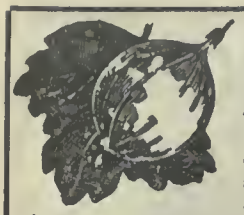
Hot bed folder mailed on request.

SIZE :--3 ft. 2 ins. wide by 6 ft. long for 4 Rows of 8 inch Glass For Butted or Lapped Glass

PRICE :--Norway Pine 95c., Clear Red Cypress $1.20.

MAIL YOUR ORDER TO-ADY

BATTS LIMITED — 374 PACIFIC AVE. — WEST TORONTO



Hardy Small Fruits

Conditions of soil and climate make it possible for us to produce stock that is hardy, vigorous, and that will give good satisfaction in almost any locality. We exercise great care in the cultivation and handling of our stock, give personal supervision to packing and shipping, and **warrant all stock absolutely true to name.** This explains why we have built up a large list of satisfied customers.

We specialize on small fruits—Raspberries, Gooseberries and Currants — also Garden Roots, including **Rhubarb, Asparagus, etc.**

List of Varieties:—

RASPBERRIES

Herbert	Cuthbert
Marlboro	Brinckle's Orange
Golden Queen	

GOOSEBERRIES

Josselyn	Red Jacket
Downing	Pearl
Houghton	

CURRANTS

Perfection	Fay
Ruby	Cherry
White Grape	Lee's Prolific
Champion	Black Naples
Black Victoria	

Order now while the list of varieties is complete. Send post card for catalogue and price list.

WM. FLEMING

OWEN SOUND Box 54 **Ontario, Can.**

Strawberry Plants

That are Great Yielders

Buy your strawberry plants from one that has made a success of growing berries for the market for many years.

I grow the Williams Improved, Parsons Beauty, Splendid and Michel's Early.

Last year the yield from 2 3-4 acres was 31,500 boxes, and in 1910 the yield from 1 1-5 acres of Williams Improved was 16,770 boxes.

I have for sale a fine lot of plants of above varieties. Prices: 75 cts. per 100; $5.00 per 1,000.

W. WALKER

Port Burwell, Ont.
Elgin Co.

Strawberry Plants That Grow

Great crops are obtained by setting our plants Strawberry, Raspberry, Blackberry and all small fruit, Apple, Pear, Plum, Cherry and Onamental Trees. Best Varieties. Lowest Prices. For large crops, and quick returns plant our NORTHERN GROWN STOCK.

We guarantee our Plants to be first-class and true-to-name, packed to reach you in growing condition, or your money back. Write for price-list and free delivery offer. Discount for early orders.

Brookside Nurseries Petitcodiac N. B.

been placed in this market at a good price, and only the lack of properly constructed cars has hindered the continuance of the trade all winter. When we learn from good authority that the west is increasing in population at the rate of almost half a million a year and that the west will take settlers at this rate for half a century, we have a right to feel that our market there is safe.

Some of the methods our growers are adopting to ensure the delivery of their fruit in the west in good condition is shown by the fact that recently six refrigerator cars, transformed into "warm cars" by the means of oil heaters and containing one thousand two hundred barrels of apples, Vandeveres and Spys, passed through Kentville, en route to Winnipeg. The consignment was in charge of Mr. F. M. Chute, manager of the Waterville Fruit Company. Mr. Chute intended to attend to their transit and safe delivery in the western city.

British Columbia

A vast amount of valuable educational work is being conducted this winter by the provincial department of agriculture in the line of improving the methods followed by the fruit growers and others interested in horticultural pursuits. In all likelihood, we will have very close to fifty packing schools this winter, with a total attendance of over six hundred pupils. During the past few months we have seen a great deal of improvement in many districts, due to the packing schools. If this work is continued conscientiously for the next two or three years, we will, as a province, outstrip Washington, or even Oregon, in the general character of our fruit pack. A comparison of the class of instruction furnished here with that of Oregon and Washington, has demonstrated its efficiency for the purposes of meeting all modern competition in fruit packing.

The policy of placing the local administration of the packing schools in the hands of a responsible local body, such as the Farmers' Institute, the Fruit-Growers' Association, or the Board of Trade, has proved entirely satisfactory, and is being continued this year.

The department provides the instructor, and pays his expenses. The department also bears the cost of the packing paper, the fruit, and all other legitimate expenses, except that of the secretarial work and of the hall rent, which it has been found most satisfactory to leave to local arrangement.

The responsible organization in each case is required to guarantee a minimum of twelve pupils, but not more than fifteen, with the proper qualifications, at a fee of three dollars each, to take the twelve lessons of two and a half hours a lesson, the school extending over one week. The department, as far as possible, uses local fruit, paying for the same the legitimate market price. About three boxes per pupil are used. The harder varieties, such as Ben Davis and Gano, are preferred. The fruit has to be in good condition, but need not be graded, and none runs under two and a quarter inches in diameter.

It is hoped that by means of these classes the invasion of Japanese and Chinese packers, so successful in California, will be largely prevented in this province. Another advantage is the development of a uniformly good pack from all districts.

INSTRUCTIVE MEETINGS

The Department of Agriculture is holding a series of short courses in fruit and vegetable growing conducted by the officers of the horticultural branch. They are be-

It Is Safe and Easy to Order

Your Seeds By Mail

Safe Arrival is Guaranteed, and if for any reason you are not thoroughly satisfied your "say-so" alone is sufficient to get your **money back without question** or quibble. We will not knowingly have a single dissatisfied customer.

In the "KEITH'S SELECTED STRAINS" will be found what we consider to be the best varieties of every prominent vegetable family. The varieties are not necessarily "novelties," but are what we consider after long years of experience the best varieties in each respective class that it is possible to produce. They are not only the finest type in themselves, but the seed is of the freshest and best obtainable.

Select from the Following List: 3 pkts. for 15c.; 12 for 50c. Postpaid.

Early Beet	Lettuce (Head)	Early Peas
Late Beet	Musk Melon	Pumpkins
Butter Beans	Water Melon	Radish
Early Cabbage	Citron	Summer Squash
Late Cabbage	Golden Globe Onion	Winter Squash
Cress	Pickling Onion	Early Tomato
Carrot	Parsley	Turnip
Celery	Parsnip	
Early Corn	Lettuce (Curled)	
Cucumber		

Oz. pkts. of any of the above, 15c each. Postpaid.

Select from the Following List of Flower Seeds, 3 pkts., 15c.; 12 for 50c. Postpaid.

Aster (Red, White, Blue or Mixed)		Pink
Alyssum	Larkspur	Poppy
Balsam	Morning Glory	Portulacca
Candytuft	Marigold	Salvia
Cosmos	Mignonette	Summer Cypress
Carnation	Nicotiana	Sweet Peas
Daisy	Pansy	Verbena
Hollyhock	Petunia	Zinnia

Oz. pkts. of the following, 15c each. Postpaid.

Morning Glory, Scarlet Runner Beans, Sweet Peas, Nasturtiums Tall, Nasturtiums Dwarf.

Oz. pkts. any of the following, 35c each. Aster, Alyssum, Candytuft, Poppy, Mignonette, Lawn Grasses, 30c per lb. Postpaid.

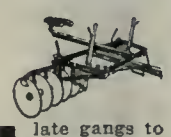
Send for Catalogue

Geo. Keith & Sons

Seed Merchants Since 1866

124 King St. E. TORONTO, ONTARIO

The Bissell



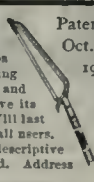
With wings attached, BISSELL ORCHARD DISC HARROW extends over 12 feet wide. Detached it is a compact, regular-size Harrow. You can regulate gangs to follow any slope of ground. You can throw weight on outer ends of gangs so that they will run even and cut tough sod away from trees or vines. It's reversible—Out-Throw to In-Throw. Write Dept. N for catalog or consult local dealer.

T. E. Bissell Co. Ltd. Elora, Ont.

See ad. of Garden Harrow, page 52.

PRUNING SAW

Patented Oct. 6th 1908



Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address

FRUITGROWERS' SAW CO., Scottsville, N. Y.

Representative for Ontario, Jas. E. Johnson, Simcoe, Ont.

The Canadian Horticulturist

Vol. XXXV MARCH, 1912 No. 3

Fertilizers For The Fruit Grower

A. Bonar Balfour, Pilrig Fruit Farm, Port Dalhousie.

THE maintenance of soil fertility is a problem confronting every fruit grower, which must be worked out by each individually according to the character of his soil and climatic conditions. Just as there is no royal road to success, so there is no one treatment suited to all conditions and all soils, like a patent medicine proclaimed to be a cure for all ills. It is true that the same general principles apply, though in their specific application they must be enlarged or modified to meet the varying requirements of the soil and plants that are to be benefited.

POINTS TO CONSIDER

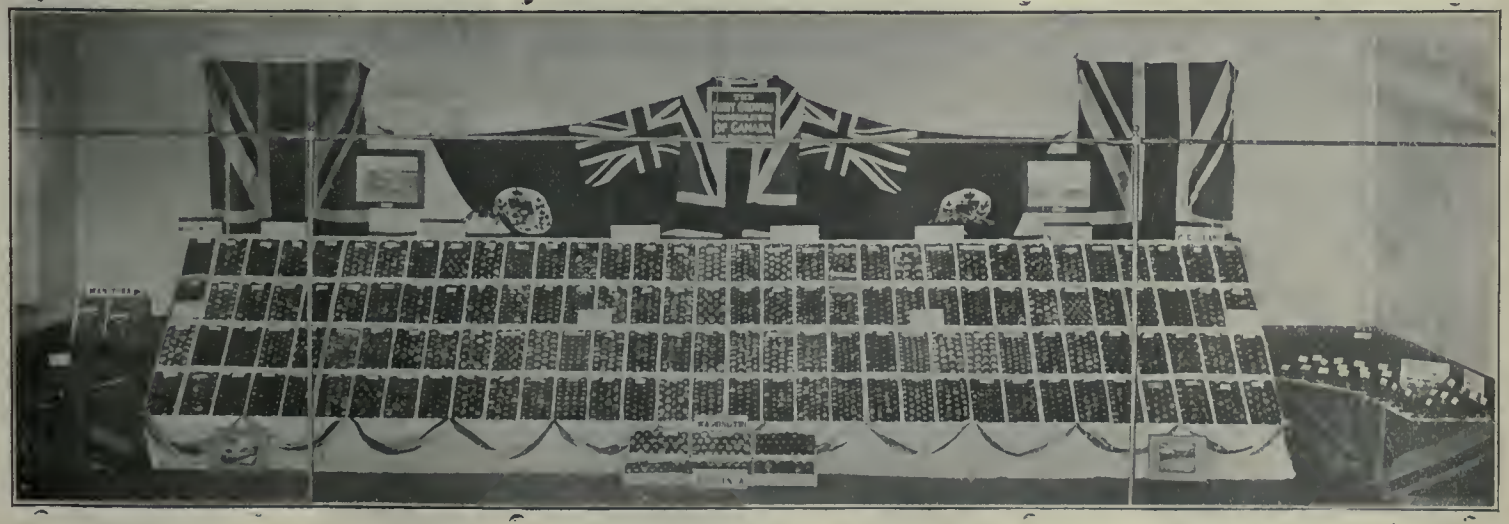
In the application of fertilizing material to our soil we must bear in mind that it is not only the mere supplying of a plant constituent supposed to be lacking in the same, but also the influence that such material may have on the soil and its properties, and on the nature and growth of the plants to be benefited. For instance, we are commonly offered potash salts on our market in three forms, the high grade sulphate, and the lower grades of muriate and kainit. The muriate and kainit both contain chlorine, and the chlorides have a deleterious influence on certain plants, being very soluble, however, and soon washed away, their deleterious effects may in a measure be circumvented by applying these fertilizers some time before planting; but this we cannot do in the case of our orchards. I do not mean to say that the chlorides are harmful to our trees and bush fruits, but it is as well to take this into consideration in the purchase of a potash fertilizer. It may be a better economy to purchase the more expensive sulphate, the combined sulphur of which is beneficial, to the purchasing of the somewhat cheaper chlorides, the effects of which are doubtful.

BONE FERTILIZERS

In the case of bone we are usually offered this in two forms: the steamed and crushed, and the dissolved. When steamed to extract the fatty matter which makes it less readily soluble in the soil, crushed and applied to the soil, it readily putrefies. Being in an intimate mixture with the soil particles this putrefaction acts on these and assists in transforming the inert matter to a suitable form for assimilation by plants. Bone in this form contains as well as the phosphate a percentage of nitrogen in a form that is valuable in the orchard, but treat it with sulphuric acid and you destroy this property and lose the greater part of your nitrogen. It is true that you have made your potash more readily available but a dissolved phosphate of lime is equally valuable from whatever source it may be obtained. It is, therefore, questionable economy to obtain it from the more expensive bone rather than from the cheaper mineral. Then, too, when we bear in mind that the economical use of a fertilizer requires that it merely supplement the natural supply in the soil, and that the soil itself must supply the greater part of the plant requirements, we will readily see that any material which is not only in itself a plant food but also aids in unlocking the natural supply in the soil, returns us the greater value.

FARM YARD MANURE NOT A NECESSITY

The efficiency of farm yard manure is largely due to the important physical effects it produces in the soil. It helps to make a clay soil more loose, and when well rotted it imparts to a sandy soil the property of retaining moisture. It is also friendly to bacterial activity, but the same may be said of green manures, and those of the legume family have the additional advantage of adding nitrogen to the soil. Over and above this, green manures are the cover crops of our orchards, so that they serve the double purpose of a cover crop and when plowed in add to the humus contents in our soil, making it mechanically fitted to obtain the best results from commercial fertili-



Apples from all the Fruit Growing Provinces of Canada and from the United States as shown at the recent Dominion Fruit Conference, Ottawa.

The fruit on the left was from Oregon, British Columbia and Ontario, in the centre from Quebec and on the right from the Maritime provinces. Notice that the fruit from the east was just as well colored as the fruit from the west. Imagine what a grand display would be brought out by the holding of a National Apple Show here in the east.

zers. Hence my contention that a fruit grower can get along very well indeed without that expensive luxury—farm yard manure.

But there is a danger in the excessive use of cover crops, especially of the legumes, for if we accumulate a large amount of available nitrogen compounds in our orchards we retard the proper ripening of our fruit. Our aim must be, therefore, to grow just sufficient to keep our soil in good physical condition, and then by the use of such special fertilizers as are required to keep our soil up to its maximum efficiency.

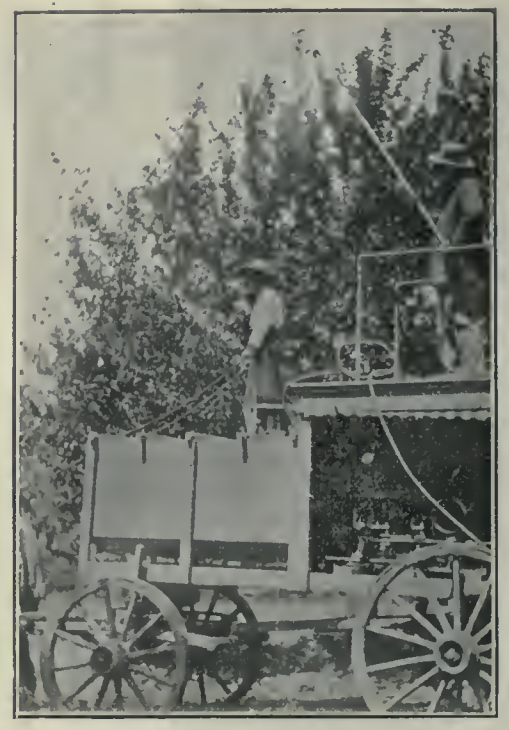
LIME A NECESSITY

A manure is "any solid substance added to the soil to make it more productive." Hence substances that are not in themselves a direct plant food or only so to a comparatively limited extent may be a manure. Lime, though fairly prevalent in soils, is nevertheless frequently lacking in the surface layers, and may be especially so when there have been heavy applications of animal manures and of green manures. Lime is necessary to the proper decay of humus and of proper nitrification. It neutralizes acids formed by decaying organic matter, and moreover it is a matter of experience that sweeter fruits are produced on soils that have a plentiful though not an excessive supply of lime.

Then, again, lime checks excessive wood and leaf growth resulting from an over-supply of moisture, and it seems to the writer it may in this manner be of service in the control of bacterial blight in the pear orchard. Hence a manure may also aid us in fighting disease.

FERTILIZERS COMBAT DISEASE

I once had an orchard of Japanese plums which had become badly affected with the shot hole fungus to such an extent that the trees were defoliated very early in the season. They had received two thorough sprayings with bordeaux, as well as the early applied lime and sulfur. To this orchard I applied a dressing of droppings from the hens' roost which had been pulverized and mixed with soil, then at the fall of the blossom, nitrate of soda at the rate of about fifty pounds to the acre, and again a similar dressing when the fruit was about the size of large buck shot. The results were most gratifying. The foliage showed a healthy color throughout the growing season and remained on the tree until late fall. Similarly, nitrate of soda may be used in the peach orchard when the foliage is threatened by leaf curl, but otherwise I would never advise its use in the orchard. It is too quick of action, and too stimulating, to make it a safe manure in the orchard. Nitrate of soda may be used advantageously in the strawberry bed to hasten growth in the early spring. It should be well pulverized and mixed with soil to bulk it and thus aid in distributing so small an amount as can properly be used, and applied when the foliage is dry else it will be apt to "burn" the plants. A peculiarity of nitrate of soda is that two light applications will have a tendency to hasten maturity while one heavier one will retard.



A Power Sprayer at Work

Notice how thoroughly the trees can be covered with the spray.

Let it be thoroughly understood that fertilizers will not replace spraying. Spraying is an absolute necessity, but fertilizers will help in certain diseases by giving strength and vigor just as stimulating diets are required by the human system to carry it through a crisis. It is needless for me to point out that over stimulation by nitrogenous manures in the pear orchard would only lead to disaster by encouraging conditions favorable to the spread of bacterial blight.

MECHANICAL CONDITION OF SOIL

Peter Henderson, in his "Gardening for Profit," describes soil deficient in vegetable matter as "a weight of soil." This expression is very apt, for soil in this condition is heavy, gritty and compact. The mechanical condition of such a soil is such that plants would not respond to fertilizers because it lacks air and loses its moisture rapidly. Air and moisture are essentials of plant life and to the releasing of plant food whether naturally in the soil or artificially placed there. It must be remembered that fertilizers though applied to the soil in soluble forms do not remain so, but rapidly revert and again become insoluble by the absorption properties of the soil. Before this occurs, however, the soluble phosphates or potash distribute themselves more or less thoroughly in the soil, and exist in so fine a state of division that they may be rapidly rendered available by the natural agencies in the soil and the action of plant roots. Nitrogen alone remains soluble and is accordingly very subject to loss by washing.

AVOID OVER STIMULATION

The intelligent use of commercial fertilizers of known source and composition, together with a soil kept in a good mechanical condition by the plowing in of green manures and by proper cultivation cannot fail of results. Your orchard may not show the effects of a fertilizing the first year of application, because the trees fruit from last year's buds, yet a plentiful supply of food will produce a healthier and stronger growth with a subsequent improvement in productiveness and the character of the fruit. The one thing to avoid is over-stimulation, especially in young orchards. Do not try to force a tree or bush big too soon else you will defeat your own ends, but grow them as big as you can compatibly with a sound, healthy development.

Then, in applying manure spread it broadcast over the whole surface of the ground and not as is frequently done just immediately around each tree or plant. The aim is to encourage an extended root growth, whereas the application of fertilizers just around the plant induces a short, curled ramification of roots, much similar to a plant in a flower pot, a condition of things not at all to be desired.

A Useful Bush Sleigh

C. J. H., Ottawa, Ont.

In the extensive movement in New Ontario and elsewhere for the renovating of old orchards, a great deal of brush and deadwood is incidentally left on the ground. After the first pruning of a neglected orchard, if not removed before the snow leaves the ground, this brush is so thick as to prevent the early spraying. The quick and well timed removal of this brush, much of which is infected with blight, moth eggs, and injurious insects, means quite an undertaking. If not gone at properly, it entails almost as much labor as the pruning itself.

In the Georgian Bay district last winter the fruit grower with whom I stayed had a lot of brush to remove from his orchard. It was found that in using a team bob-sleigh the weight of the sleigh alone was almost too much for the horses in the deep snow. The fault was remedied as follows:

The platform and rear bob of the sleigh were removed from the sleigh, and two twenty foot maple saplings were laid on the truck of the bob. These were

laid with the thick ends facing ahead and were chained about four feet apart. On these saplings were nailed cross pieces about eighteen inches apart. These were placed at these intervals until within two feet from the thinnest ends of the saplings. Only one four inch nail can be put in each board as the rack must not be too rigid or it will break in turning corners. The broad crosspieces projected about a foot over the poles at each end, giving the rack a total width of six feet. On the last board an extra heavy cross-piece, two by three inches, was bolted to the poles. From the cross-piece we ran a rope forward to the first board. This completed the making of the rack.

On reaching the place in which the load was to be dumped, we lead the rope up over the front of the load and passed it back behind the rack where it was held by one or two men as the load required. By starting the team ahead the load rolled off at the back in a neat pile. The dumping of a load by this means does not take as long as the telling.

By using one of these brush racks the wear and tear on horses and men is reduced to a minimum, and the time required for removing brush is cut in two. It takes a little less than an hour to make such a rack and it is easily made.

Refrigeration in Relation to Fruit Growing

Dairy and Cold Storage Commissioner, J. A. Ruddick, Ottawa.

THE modern use of refrigeration is nothing more than the systematic application of principles that have been recognized from time immemorial, and which have been universally practised by every housekeeper in the land. The vegetable and fruit cellars in connection with our houses, differ from regular cold storages only in degree or in the lack of that absolute control of temperature which refrigeration gives. The practice of hanging meats or poultry in a cold place during the winter months has exactly the same object behind it as if the goods were placed in cold storage. The fruit grower who holds his apples in a "frost proof" warehouse is using cold storage, which is more or less effective as the temperature of the warehouse is reduced to the minimum of safety. These methods, that take advantage of what may be called natural cold storage, are of course defective inasmuch as they are least useful, if not entirely valueless just at the time when the protection is most needed.

All admit the value of a low temperature in the preserving of milk, butter, meats, fruits, or vegetables for family use. Such foods are always placed in the coolest spot available and very generally in a miniature cold storage warehouse in the shape of a kitchen refrigerator. And yet it is a fact that there is still some prejudice against cold storage foods, not only on the part of the consumer, but with the dealer as well. It is true that food products do not always come out of cold storage in a satisfactory condition, for the simple reason that they are often out of condition, or over mature, when they are placed in cold storage. The function of cold storage is preventive, not corrective. I mention this because I find there is much need for more attention being paid to this point in the application of refrigeration to the preservation of food products.

It has frequently been asserted that the large quantity of apples which are wasted every year, and especially when there is a heavy crop, could be saved if sufficient cold storage space was available. The writer of a paper at the last meeting of the Royal Society of Canada advanced this view, and his figures of the saving which might be effected ran into millions of barrels. I need not tell experienced apple growers that this view of the matter is erroneous. In the first place it is not possible to save these scabby, bruised, and wormy windfalls, and in the second place it would not pay to employ cold storage to save them even if it were possible. The proper destination for such inferior fruit is the evaporator or the cider mill. Moreover, there would be little or no advantage in cold storing a large proportion of the fruit that is actually marketed owing to the presence of defects or injuries which would result in early decay in spite of cold storage .

The losses arising from diseased fruit, or from mechanical injuries received in picking and packing far exceed any losses which may result from a lack of cold storage facilities especially for late or winter varieties. I do not say that to minimize the importance of cold storage, but rather to emphasize the other thing . We will never derive full benefit from cold storage until we first learn to handle our fruit carefully, so as to avoid bruises and other injuries.

Refrigeration can be made to serve the fruit trade of Canada in the following different ways:

1. The use of iced cars for the transportation of fruit in warm weather.
2. The chilling of early apples and tender fruit before shipment in iced cars.
3. The cold storage of fruit intended for long keeping, and to extend the season for choice varieties.

USE OF ICED CARS

The use of iced cars for the carriage of fruit is increasing year by year. Fruit growers are learning that the question of temperature in transit is of as much importance as the length of time occupied in carrying the fruit from one place to another. As an illustration of what I mean I would draw your attention to the experience of this Department in the shipment of peaches from St. Catharines and other Niagara points to Montreal for export to Great Britain, in 1910, the details of which are to be found in bulletin number twenty-seven of the Dairy and Cold Storage Series. We found that we got better results when the fruit was despatched in iced freight cars than we did when it was sent by express without ice, although it took one day longer to go by freight. The same thing will apply in the shipment of any fruit.

*Extracts from an address delivered at the recent Dominion Fruit Conference in Ottawa.

Check Plots on Which No Fertilizer Was Used. No. 1.

What Tests of Fertilizers Have Shown

Prof. R. Harcourt, O. A. C., Guelph, Ont.

IT is the first business of the farmer, gardener, and fruit grower to strive to produce maximum crops of good quality. To accomplish this year after year, it is not only essential that the land be in a high state of fertility, but that the farmer understand the peculiar needs of the crops he is growing and strive to make the soil, which is the home of the plant, as congenial for it as is possible. It is a well recognized fact that an abundance of suitable food and water and comfortable surroundings are of vital importance to the development of a strong healthy animal, but it is not so fully realized that the same conditions are as essential for the production of vigorous productive plants.

This Illustration Shows the Effect of the Use of a Mixture of Nitrogenous, Phosphatic and Potassic Manures.—No. 2

A plant not only requires that its leaves be bathed in pure air and bright sunshine, but the soil must furnish a warm, airy and roomy place in which its roots may spread themselves and collect an abundant supply of food and water. The air and sunshine are free and an abundant supply always available, but the condition of the soil and the availability of the plant food is largely dependent upon the skill and intelligence with which it is handled.

Experiments have demonstrated that our common domestic plants require at least ten elements in their food. The absence of any one of these elements, or the inability of the plants to secure the minimum quantity required of any of them, must, consequently, be a limiting factor in the proper development of the plant. Fortunately, most of our soils are abundantly supplied with all these essential food materials, and, furthermore, nearly all of them are held in such a form that they are not readily leached from the soil. Plants, however, take up comparatively large quantities of nitrogen, phosphorus, potassium and calcium, and as they are removed with the crop the supply must become smaller. Then, too, as nitrogen is finally made available to the plant as nitrates, which are very soluble and not held by any chemical combination with the mineral constituents of the soil, loss of nitrogen by leaching may occur. Lime, also, as a result of many chemical changes taking place in the soil, is continually being carried away in the soil water. Evidence of this is seen in the fact that water leached through the soil is always hard, owing to the large amount of lime it contains. For these and other reasons the four above named elements are the ones which must receive the most attention.

MUST BE AVAILABLE

But! the presence of the chemical elements of fertility in themselves is not sufficient to insure good crops. To serve as food they must be in a form that the plant can take them up, i.e., they must be soluble in the water of the soil. Water is, consequently, absolutely essential both for the solution of the food elements in the soil and for their distribution in the plant. In well drained land this water is held on the surface of the soil particles and the interspaces are open, thus making it possible for the air to penetrate into the soil and supply the air essential to the life of the various types of organisms engaged in breaking down the organic matter and bringing its nitrogen into a form suitable for the growing plant.

The acids formed in this decomposition process help to render the mineral constituents available. Thus, while it may be correct to speak of the soil as a reservoir of plant food, it is equally true that it may be considered a manufacturing establishment in which all the various factors work together to produce the best results. We cultivate soils, then, not only to produce a good seed bed, but also to open it up that air and warmth may more readily penetrate to supply the wants of the roots and the myriads of organisms that are directly and indirectly engaged in preparing the food for the plants, and at the same time we conserve the moisture which is also essential to the well being of the life in the soil.

It is evident, then, that while a good soil may have abundance of plant food constituents, it is only as we cultivate thoroughly that we can bring about the condition essential for the rapid decay of the organic matter, which in turn supplies the nitrogen, increases the availability of the potash and phosphoric acid and conserves the moisture. Good management will also include careful handling of the farmyard manure and the judicious use of legumes to gather nitrogen from the vast supply in the atmosphere. It is only after the most careful attention has been given to all these points that fertilizers should be introduced.

THE USE OF FERTILIZERS

In the case of light feeding, deep rooted crops, as, for instance, some of our cereals, good cultivation and proper rotation will render it unnecessary to stimulate growth by the use of fertilizers. But with heavy feeding crops like mangels, turnips and many of the garden crops, even the best of cultivation may fail to render sufficient plant food available to produce a maximum crop. Again, if farmyard manure is supplied in large enough quantities to furnish the required amount of mineral matter for such crops as tomatoes or fruit trees, especially if legumes are used as cover crops, there is very apt to be too large a growth of leaf and stem with imperfect development and ripening of the fruit. This is due to the fact that farmyard manure is richer in nitrogen than in the minerals. For this and other reasons it is generally considered better practice to combine the use of stable manure and fertilizers for garden and orchard crops.

(To be continued)

Canadian Gardens—A Happy Day in a Hamilton Garden

By Miss M. E. Blacklock, Toronto, Ont.

ARTICLE No. 3

AN invitation to visit the beautiful garden of Mr. and Mrs. W. A. Child of Hamilton, had something sufficiently exhilarating in it to annihilate bad weather conditions the day of my journey. The reward for braving the elements proved ample, for my destination, "Netherwood," is truly a lovely spot.

The house is a large commodious one with sun rooms and verandahs galore, and fitted up with every modern luxury. It is framed by wide stretches of lawn and magnificent trees. From one of the upper verandahs, which by the way is furnished with a huge brick fire place, a fine view of the grounds is obtained. Particularly beautiful is the outlook towards the mountain, where the flower garden merges into the grass-land, with fruit trees dotted over it, and the grass-land into the shrubbery, and finally into the wood on the mountain side.

"Netherwood," The Residence of Mr. and Mrs. W. A. Child, Hamilton Ont. (No. 1)

After enjoying this view, my host and hostess suggested a ramble up the mountain, so we were soon loitering along a lovely path (Illustration No. 2) which wound in and out amongst the grand old trees, stopping here and there to take in a dozen different views of the house and grounds and the city beyond (Illustration No. 3.) All along this path nature has been lavish of her gifts. Ferns, asters, golden rod, and many other old friends, nodded a greeting to us as we passed, the leaves of hepaticas, trilliums, bellworts and many another of the dear ones of spring, brought a vision of what that season must be in this favored locality.

In answer to an enquiry, Mr. Child owned to having given nature a little assistance by bringing home certain choice varieties, planting them here and there, but they were added with the "art that conceals art," and no stiff groupings or incongruous color schemes marred the harmony of the scene. In one spot a small "laid" stone wall, recently built, held back the earth, which otherwise would have blocked the path, and already little walking ferns and cliff-brakes were accommodating themselves to their new abode, as if they realized that they were put there by a hand that loved them and were responding to it as plants nearly always do.

Before we succeeded in reaching the boundary of Mr. Child's land, which goes through to the road on the mountain side, one had developed a fairly wholesome respect for the height of Hamilton's mountain, particularly after coming out on this road and finding great cliffs still towering over our heads.

The Rambling Path (No. 2)

Returning by a differen path, with beautiful and ever changing outlook, we at length reached what most people would consider the garden proper (Illustration No. 4.) This was comparatively small, but it fulfilled its mission in life, which was the supplying of cut flowers for the house. It was gay with the

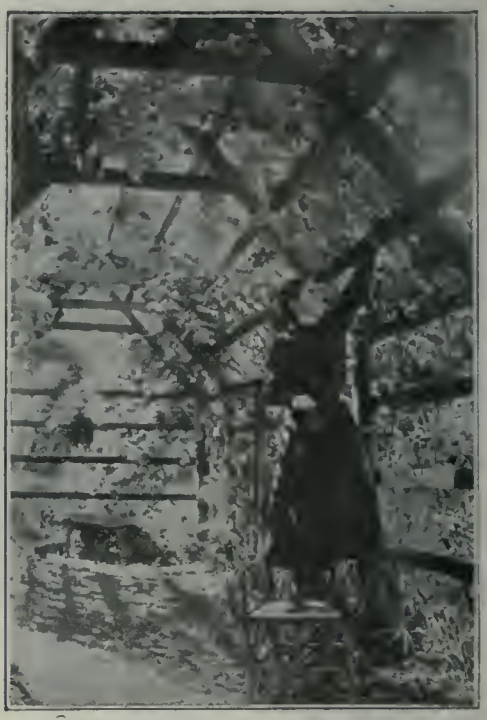
One of the Lovely Views from Mr. Child's Garden (No. 3)

A Glimpse of Mr. Child's Garden, Showing a Corner of the Lawn (No. 4)

bloom of many sweet old-fashioned annuals, as well as salvias, cannas, dahlias and others. This, Mrs. Child explained, was her own particular delight, and very attractive it was, and she is planning to add to it more perennials, especially peonies.

THE LAWN AND FERN GARDEN

A terrace separates the garden from a fine smooth bowling green; this again is separated from the lawn by an evergreen hedge, one or two formal steps leading down to it. On the lawn were groups of the most beautiful trees, amongst them a glorious old sumach, giving quite a tropical air, and under which the family generally had their cup of afternoon tea during the warm weather. A little farther on, under the shade of the trees, Mr. Child pointed with pardonable pride, to the joy of his heart, the fern garden. He aims to grow here all the ferns indigenous to Hamilton and the vicinity, and judging by the immense number already in his possession it seems as if the task he has set himself is nearing completion. Here one saw ferns that one had searched for in vain for many a year, or perhaps only found in Niagara Glen, where one is not allowed (I am thankful to say) to annex any of them. There were beautiful specimens of Goldie's Shield Fern (Aspidium Goldianum) and also of Aspidium Felix-mas. The narrow-leaved spleenwort (Asplenium Augustifolium), the Hart's Tongue (Scolopendrium vulgare). The Christmas fern in a ruffled variety, known as Aspidium Acrostichoides, variety crispum, and others that have escaped one's memory. Less rare, but none the less beautiful on that account, were clumps of filmy Maiden Hair and of the stately ostrich fern, and of its plainer sister, the sensitive fern. Farther on were some handsome specimens of the Royal fern, which always makes one think of a brobdingangian maiden hair, and its less aristocratic but equally beautiful sisters, the Cinnamon fern and the Interrupted fern, with the paler green of the New York fern to bear them company. (Illustration No. 5.) The Beech ferns also were in evidence, all three of them, their long stems giving the suggestion, as one writer has quaintly put it, "of holding their skirts out of the water." The graceful Dicksonia, and the lovely Spinulose wood ferns,—whose fronds often survive our winter snows, still keeping their perfect symmetry intact,—were hobnobbing with Bladder ferns, and the Evergreen wood fern, and others too numerous to mention. Many other lovely woodsy things grew here, in fact the fern garden gradually broadened into a wild garden, where many very interesting specimens were to be found.



Arbor Covered With Grape Vines (No. 6)

From the wild garden we emerged upon a high tennis lawn, and wandering on we came to one of the grape arbors, from the rafters of which magnificent clusters of grapes hung in great profusion. (Illustration No. 6.)

Our explorations next took us to the grounds on the other side of the house, from which the ground slopes away, gradually at first, then abruptly. Between two steep banks a beautiful little stream meandered along, quietly, because the dry summer had curbed its babbling propensities, but in the spring of the year the water rushes over the little dam right merrily, my host told me.

The banks of this stream are planted with many water loving things, such as the wild iris, the marsh marigold and violets, and Mr. Child is planning to

A Section of the Fern Garden—Ostrich Fern in Foreground (No. 5)

The Stream and Rustic Bridge in Mr. Child's Garden (No. 7)

increase their number and effectiveness in the near future. A pleasing rustic bridge spans the stream. (Illustration No. 7.)

We returned to the house by a fruit-tree-studded lawn, and happening to pass a very artistic doorway, covered with beautiful vines, enquiry was made as to where it led to. The answer was "The kitchen!" It was an ideal back door at last. A whole sermon might be preached on that doorway, but it is not necessary for the photograph (Illustration No. 8) will convey the lesson better than words. Everyone must agree that it is a refreshing sight. Alas, how few can live up to it.

Mr. and Mrs. Child have evolved their garden bit by bit and have aimed at retaining all the natural beauties of their lovely place, which are always so much more satisfying than those "made to order." How admirably they have succeeded, the accompanying illustrations made from photographs taken by Mr. Child, prove conclusively.

Vines for All Purposes

F. E. Buck, Central Experimental Farm, Ottawa

THE number of hardy perennial or woody vines which can be grown in North America is about forty. Then there is about an equal number of half-hardy vines, very few of which can be grown further north than the latitude of New York—some parts of the west coast excepted—and finally a third group of more than fifty tender vines, most of which need greenhouse or conservatory conditions.

Altogether we have about one hundred and fifty vines—if some of the best annual vines be included—which are available for decorative and utility purposes in our homes and gardens. About twenty of these hardy woody vines can be grown with complete success in the vicinity of Ottawa, and perhaps an additional dozen in the more southern parts of Ontario.

CARE AND TREATMENT

Vines, like most other plants, respond to good conditions with regard to soil and situation, and also to careful treatment, but as a rule, and very fortunately so, most of the perennial vines thrive under many conditions, even when badly neglected. The large number of very pleasing vine effects obtained by people one might say almost by chance, is no doubt due to this fact. However, it should be remembered that vines will respond to good treatment and when planting carry out these suggestions if by any means possible:

1. Supply good soil and also drainage where necessary.
2. Plant all vines a little bit deeper than they grew in the nursery.
3. If watering be necessary, water very heavily or not at all; pay special regard to this point just after the vine has finished flowering.

After the vine is established train it with consistency and care. Prune it very little, but prune to encourage it to take a graceful, natural, and attractive form. If it flowers in the spring, prune it just after it has flowered; if it flowers in the summer, the correct time to prune it is in the early spring.

PURPOSES

Vines are used for a number of purposes. These purposes, for the sake of clearness, are grouped here under two headings:

1. Vines used for purely decorative purposes.
2. Vines used as screens.

"Vines used as screens" may be further divided if wished, and in that case we should have, first, vines used as screens for the purpose of giving privacy or landscape effect, and second, vines used as screens to hide unsightly objects. The same vines, of course, may be used to serve both purposes, but discussing them as thus classified we have first of all—

DECORATIVE VINES

"Decorative vines" are used for about seven different purposes, or in seven different places. Even in Ottawa, where vines are not grown to the same extent as they are further south, one would shudder to think of the barren harsh appearance of the domestic architecture in our villages and cities were such deprived altogether of the softening effect produced by climbing plants. Their use not only lessens the number of intolerable eyesores produced by ugly fences, outbuildings, and untidy backyards, but by using climbing plants there is also a

"The Ideal Back Door at Last" (No. 8)

chance of redeeming the mistakes of the architect. Bare glaring house walls, ugly terrace walls, barren harsh-looking verandahs and porticoes may be softened and made pleasing by using suitable vines of rich foliage or flowering effect. Let us consider then, first, those vines suitable for growing:

ON AND ABOUT THE HOUSE

For the walls of the house, where English ivy will grow, no vine can take precedence, but this climber is not hardy at Ottawa, and we have to use another vine instead. One which can be recommended almost as highly, and in some respects more so, is the Virginia Creeper, not the more southern variety, but a particular strain known as Ampelopsis quinquefolia hirsuta, the self-fastening variety. It may be mentioned that this variety is not always sold by the nurserymen as hirsuta. It appears to be called by some Englemanni. But it is important to obtain the self-fastening kind, which is quite hardy in Ontario and frequently seen.

The Vine on the House is the English Ivy, a Rapid Grower, and on the Verandah the Virginia Creeper. Residence of Mrs. P. L. Taylor, St. Catharines

The ordinary Virginia Creeper is almost useless as a self-climber. As an instance that it is not always easy to obtain the right kind, it may be mentioned that several years ago a large public institution ordered about a hundred plants. Those which were sent under the name of hirsuta turned out to be no good as climbers, while those sent as Englemanni proved to be self-fastening, and in two years had reached to the tops of buildings some forty or more feet high. The real hirsuta strain in addition to being the best climber is also the healthiest of all. It is seldom troubled with the red spider or other insect and fungous troubles.

BOSTON IVY

Another good vine for covering the house is the Boston Ivy or Japanese Ivy (Ampelopsis Veitchii). This is one of the best self-climbing vines. At present, however, no strain of it has been found hardy enough to withstand the Canadian winter. Every year it is partly killed back, and in severe winters it may be killed outright. In the south of Ontario if planted on the north or west side of the house it will often pass through many years without injury. It is a very symmetrical and beautiful vine and colors well in the autumn. It is readily distinguished from the Virginia Creeper on account of its simple leaves. The Virginia Creeper has five parted leaves on long petioles.

Two excellent vines for the house are the Trumpet Vine (Tecoma radicans) and the Kudzu Vine (Pucraria Thunbergiana). Neither of them are hardy in this vicinity. The former is hardy in the lake district, but needs partial support. The Kudzu Vine is not hardy, but is a vine of remarkable vigor, and gives great satisfaction where it can be grown.

ON THE VERANDAH OR PORCH

The best vines for growing on the verandah or porch in this vicinity are the Dutchman's Pipe Vine (Aristolochia sipho), generally quite hardy at Ottawa and Montreal; the climbing Bitter-sweet or Waxwork (Celastrus scandens), a native vine of distinct merit, which has good foliage and in autumn and winter its bright berries make it especially attractive: and as a third good porch or verandah vine, the Clematis claims a prominent place. Clematis' are to be had in great variety. Clematis Jackmanii is the large flowered variety producing an abundance of beautiful flowers throughout several weeks in the summer. Many colors are now obtainable. Of the smaller flowered clematis' there are several good varieties which will answer the same purpose. The Virgin's Bower is the common name often applied to any of the smaller flowered kinds. As a rule all but the Jackmanii type are best suited to cover terrace or fences.

Other good vines for porch or verandah are the Honeysuckles, several varieties of which are hardy at Ottawa as Lonicera periclymenum, L. sempervirens, and L. hirsuta; also the Chinese and American Wistarias, the Japanese Bitter-sweet, and a very graceful and highly attractive vine called Akebia quinata, a Japanese climber with many points in its favor, including that of hardiness.

AROUND THE GARDEN

Half the charm and beauty of our gardens is created by the judicious planting of climbers. Nothing can be more delightful to the sense of sight and smell than that which is produced by climbing roses, honeysuckles, and other vines, climbing over arches, pergolas, and arbours, or rambling over terraces and rocks. They are the most satisfactory of all garden shrubs. Producers of ever increasing pleasure and seldom giving disappointment, it is surprising that their triumphs in creating so many ideal features in our gardens are not more readily appreciated by us.

ON ARCHES

Perhaps nothing can be nicer on arches than the climbing roses. Of these there are several which are fairly hardy even at Ottawa. Winter protection is, however, generally needed, not so much on account of the cold, but rather to inhibit a too early start in the spring. It is to be hoped that before long many varieties will be produced which can be recommended without any hesitation. At present several of the ramblers, namely, the well-known Crimson Rambler, and Dorothy Perkins, together with Lady Gay, climbing La France and Gruss an Teplitz, have proved themselves to be fairly hardy at Ottawa and vicinity.

But roses are not the only satisfactory vines for growing on arches. A very delightful vine for this purpose is that Japanese vine Akebia quinata, which has

A Lovely Backyard, That of Mrs. P. L. Taylor, St. Catharines

The fence around this garden is covered with a variety of vines, including trumpet vine, nasturtiums, sweet peas and wild cucumber. The tree stump in the center is covered with scarlet runner beans. Around it are zinnias, phlox, petunias and marigold. In the border are cannas, gladioli, foxglove, columbine, sea lavender, roses, lychnis with shrubs on one side of Japan snowballs, hydrangea and pampas grass.

a very graceful and attractive habit, and should be seen much more frequently than it is. It has compound pretty rich green leaves and the flowers, which are delicately scented, are produced in the spring. As tested at Ottawa, it did not appear to be quite hardy, but hardy enough to warrant a trial. It is quite hardy a little south of here. Several varieties of Clematis also appear to good advantage on arches.

ON THE PERGOLA

Pergolas, both rustic and formal, are delightful garden features where they can be worked in without incongruity. A pergola affords the very best place on which to grow vines. All of the vines thus far mentioned can be grown with every degree of satisfaction and success on a pergola. There are, however, several vines which seem particularly suited to it. Of these the Trumpet Vine (already mentioned under house vines), Tecoma radicans or T. grandiflora, noted for its large orange-red trumpet-shaped flowers and vigorous habit of growth; the Japanese vine Actinidia arguta, noted for its glossy green attractive foliage and twining habit; and the Wistarias with their glorious racemes of pea-like flowers, are among the front rankers. Indeed, the Wistarias are regal in their magnificence.

Many people give to the Wistaria the premier place amongst all shrubs. A large Wistaria bloom on a pergola is a sight not easily forgotten. Unfortunately, however, these vines are not perfectly hardy at Ottawa. However slightly to the south, they are more reliable, and it is to be hoped that before long we may get strains hardy here.

ON THE ARBOUR

For the arbour, grape vines, especially some of the hardy native wild grapes, are particularly suitable. Vitis riparia, the sweet-scented grape, is a rapid grower with graceful habit and V. cordifolia is a strong grower. Several of the cultivated grapes are also suitable for the arbour.

FOR THE TERRACE AND BALUSTRADE

The Clematis, in several varieties, can be recommended for the terrace and balustrade, together with several of the Honeysuckles, L. Japonica, etc. Also the Chinese Matrimony Vine, Lycium Chinense, and the trailing roses, the best of which are the Wichuriana hybrids, called also Japanese Memorial Roses. These are not very hardy, but they can be grown successfully if a little care is exercised in the spring treatment. Hall's strain of L. Japonica and Euonymus radicans are both excellent for this purpose, but neither can be said to be hardy.

VINES AS FENCES AND SCREENS

Having dealt with vines from the standpoint which places their decorative value first, a few words remain to be said from that point of view which places their utilitarian value first. Looked at from this standpoint, it may be said that there are many which will, if treated correctly, form the least expensive and yet the most effective and permanent kind of boundary fence. And vines also are unique as being the only form of material from which we can form an effective and pleasing screen to hide or cover unsightly objects.

AS FENCES

There are several vines, such as the Matrimony Vine and the Honeysuckles, which will form quite effective fences. Without the aid of artificial support, however, generally the best way to use them as fences is to put up a light and low wire fence and train them over this. The common Virginia Creeper and the native Virgin's Bower are very suitable. Or both these vines may be grown together with fine effect.

The following varieties of Clematis are all good: C. Ligusticifolia, with white flowers in midsummer; C. paniculata, the Japanese variety, attractive flowers in September; C. Virginiana, the native Virgin's Bowers; and C. Vitalba, Traveller's Joy, the European variety. A light type of soil is best suited to the needs of the Clematis. Several of the Honeysuckles make good fences, as

Some of the Flower Beds Maintained at Street Corners by the Windsor Horticultural Society

also do the hardy roses, as Rosa Rugosa and others.

AS SCREENS

As screens of all kinds a great many vines can be recommended. If a vine is to be grown as a screen the best way is to proceed as follows: Procure a plain strong screen, the style or pattern of which is a secondary consideration, and a good strong, vigorous plant. Give the plant good rich soil. If you want a rapid and successful effect remember that it can be obtained by putting an extra dollar into the cost of the preparation of the soil and the quality of the plant. Ten dollars for the screen and twenty-five cents for the plants is a poor combination. A better one is five for the screen, one for the plant, two for the soil and preparation, and two saved for eventualities.

In some parts climbing roses can be used with grand effect, especially if they are grown on screens which can be laid down during the winter. The Virginia Creeper, several of the vines mentioned above, and a number of annual vines are also suitable for growing on screens. Varieties of Clematis, however, should not be used, as all lack foliage, which is very essential in a vine used for a screen.

The question of the annual vines is too big for discussion here, but it should be mentioned that the annual forms are a great addition to our gardens. Among them are many which may be grown with success under many conditions. They should not be overlooked for some of the purposes mentioned above.

The Seed Catalogues

A. J. Elliott, Aylmer, Ont.

IN an article written by a lady in one of the floral papers, she said, "The annual seed catalogue is the best reading I can get in January." While few will follow this lady to that extreme, most of us are heartily pleased to get the first one that arrives. It is studied, new things noted and discussed, and when the whole budget arrives our lists are made out understandingly.

They are worthy of respect, most of them. We see in each a representation of some firm, that binds itself to abide by the conditions therein contained, and while we may smile forgivingly at the exaggerations they mostly indulge in, we acknowledge that they are doing their best as a drawer of business. Note the pretty litho-colored cover, the clean, sharp impression, cuts all brought up nicely, not too much ink nor too little, register right, book in folio and page; everything square, with no jagged edges, and you are almost sure to purchase anything you want from such a source.

It has often been said that it is an impossibility to grow flowers to the perfection that these catalogues show in their colored plates. While that may be true mostly, I have grown beds of tulips, asters, phlox drummondi and lilies that would defy printer's ink to equal in color and beauty.

By the old professional or amateur in floriculture a lot is taken for granted, and their knowledge guides them when making up their list of seeds. But they are liable also to be taken in occasionally by something new, as the writer was last year with the arctolis. It was listed as fifteen inches high, just what was wanted, but when it grew up to thirty-five inches, and at ten in the forenoon closed up its flowers to six o'clock in the evening, it made a glorious weed.

BE ON YOUR GUARD

I am fain to admit that to the tyro the catalogue is a delusion in more ways than one. It is opened, and the flattering descriptions taken as gospel. A list is made out, oblivious to the fact whether the soil the seeds are to be planted in is clay, loam, sand or muck, or whether they are hardy or tender, annual or perennial, and at the end of the season, because of the failure that must ensue, the seeds, catalogue, and growers, are all termed frauds, it never occurring to the buyers that the fault lay with them, primarily through ignorance.

It is a fairly good theory to go easy on new things. Still, everyone likes to have a rarity in the garden to watch and care for, and if it turns out right, that is all the satisfaction required.

LEARN THE "STANDBYS"

To the new beginner, I would say find out the old standbys that succeed well in your section and soil for they are seldom beaten by the new candidates. Give them all the attention they require and you will be better satisfied. Then as you go along successfully, as you must, add the new comers as you feel your ability to cope with them.

It has cost the old hands dollars for plants, bulbs and seeds that having been tried one season were found wanting and withdrawn. This need not be your fate, unless you choose.

Better success can be gotten by buying direct from the house, whether it be seeds, roots or bulbs, and by so doing you are kept up-to-date by receiving a catalogue every year. Thus you hear of novelties and have advantage of any premiums, which are not forthcoming from the retail dealer. The order comes fresher, and in cases like lilium auratum it is an item, as this bulb objects to being kept in a dry condition.

One thing more. It may be a matter of policy for the seedsman to print a colored plate showing peonies, delphiniums, perennial phlox and hollyhocks blooming at the same time, but it gives a wrong impression. It is not done.

The seed catalogue is the only medium between the grower and buyer, and is here to stay. Treat it understandingly and your prospect of success is made more certain.

Planning the Garden

E. I. Mepsted Ottawa

With the season of 1911 behind us we must now lay our plans for this year's garden that is to be. As we can do but little now except think, it behoves us to lay out our work. The best of success is only obtained by well thought out plans. We know what ground we have and now we can think over the best way to utilize it. It is very pleasant to plan out the crops we have to grow, and the best position for them, and to draw out a sketch of the same. To do this we must do some reading of horticultural books, and look over some of the volumes of The Canadian Horticulturist, and thus gain knowledge from the experience of others.

When we have thought out what we intend to grow, the next thing is to think of the varieties we should grow both in seeds and plants. We can gain a lot of information from catalogues of good seed houses. Depend mainly on good, well-tried varieties, and do a little experimenting with new varieties, but never depend for main crops on a new introduction, for although descriptive catalogues are most useful, yet some descriptions are rather highly coloured. Lots of information can be obtained from our successful neighbors. Never be afraid to seek such information. We have each and all some good sensible knowledge up our sleeves. Get your orders in for your wants early so that you are well up on the lists of the seedsmen and florists, for there is nothing like having necessaries on the spot when the time comes to use them.

One great factor in the advance of horticulture in Ontario are the horticultural societies in the cities, towns and villages. Through them we obtain horticultural literature, papers and lectures on topics of interest, and what is the most useful, the "Question Box." I bring this to your attention because it is the beginning of the year, and every lover of horticulture, and everyone desirous of increasing their knowledge should join their local society. In this way also you will get premiums in plants, seeds and bulbs of the newest varieties.

When sowing seeds we should remember that flower seeds usually are very small, and that they should be covered very lightly.—D. W. Marden, Pilot Mound, Man.

Plants and Flowers for Shady Places

Wm. Hunt, O. A. C., Guelph, Ont.

THE importance of selecting plants and flowers suitable for the particular location they are to occupy cannot be over estimated. The greatest possible care bestowed on the preparation of the soil and the after care of the plants will be of comparatively little use unless the requirements of the plants as to sunshine and shade are given due consideration. This fact is perhaps not of as much importance in selecting plants for shaded or partially shaded positions, as it is in the selection of plants for very sunny positions. There are very few of even our sun-loving plants that will not give fairly good results in partial shade. On the other hand, a shade and moisture loving plant will be often entirely ruined if planted in a position fully exposed to the sun.

White Foxglove
All of the foxgloves delight in a little shade.

There are but few if any of our ordinary garden plants that would not be benefited by being slightly shaded from the extreme heat of the sun that prevails in the middle of the day during the summer months, sometimes even during the early part of June. This was very noticeable during the extreme heat and drought that prevailed during the early part of last summer. The shade loving plants naturally suffered the most. In many instances, clumps of perennial plants, such as iris, herbaceous spireas, lily of the valley, dahlias, primroses, pansies, and other similar plants suffered severely, so much so, that the flowers on them were of little, if any, decorative value. Dahlias especially suffered very severely from the extreme heat of last season. Indeed, very few good dahlia blooms were seen until cooler weather prevailed quite late in the fall. Copious supplies of water at the roots, as well as overhead sprinkling, has no beneficial effect in counteracting such intense sun heat as prevailed during the early part of last summer. The same might be said of some of the shade loving annuals, such as the Malope (Mallow), Convolvulus minor, and Nemophila, planted out in the open, but where partial shade was given good flowering results were obtained.

THE SHADE TO GIVE

The great point to secure in giving shade to plants is to give the proper density of shade required, without shading too closely so as to induce a weak, spindled growth. This last named condition is quite as undesirable in plant life as over-exposure to the heat of the sun, if good flowering results are to be obtained.

Partial shade sufficient to break the concentrated heat of the sun, and so arranged as to allow of the maximum of normal light possible, and a free circulation of air, are the conditions that best suit most of our shade loving plants For ferns, mosses and a few other non-flowering plants, a denser shade and less free circulation of air is desirable for these to succeed well.

A short distance away from the north side of a fence or building, where the plants are shaded for three or four hours in the heat of the day, but otherwise fully exposed to light and the early and late sunshine, is an ideal position for flowering plants that require partial shade only. Ferns and similar shade loving plants could be so planted close up to the building or fence, instead of a short distance from it, as very few of them require any sunshine at all.

TREES FOR SHADE PURPOSES

Many trees may also be made use of for securing the desired modicum of shade for plants Apple, pear and plum trees, and a few lawn trees, such as maple, birch and beech, may often be utilized for shade purposes The difficulty in making use of trees to secure shade is the danger of the plants planted near them becoming starved or stunted, from the fact that the roots of the trees absorb and take up all the nutritive elements, and the moisture in the soil.

Very few plants will succeed when planted under or near to spruce, elm, willow and similar trees, that have what might be termed an abnormal root development, that devour everything of a nutritive nature there is in the soil anywhere near them. The roots of these trees will often extend around them on all sides to a distance equal to the height of the trees, hence the desirability of avoiding planting near to them, either to secure protection from the sun, or for any cultural purposes. That partial shade, of a greater or lesser degree of density is desirable, is admitted. The point for the plant grower to ascertain is the amount of shade that can be given beneficially to the plants without injuring them.

Group of Lilium Candidium in partial shade

SUCCESS FROM SHADING

A friend of mine used always to be able to carry off first honors for out-door cut roses at the July show. Not that the roses were better varieties or larger or finer blooms than others staged, but simply from the fact that his roses had a freshness and soft intensity of coloration almost indescribable. The secret was a shading of thin cotton sheeting, stretched on stakes and slats of wood over the bushes during the middle of the day, for a few days prior to the exhibition.

(To be continued)

Lemon Lily and English Garden Daisies
Partially shaded by apple trees.

Fertilizing and Starting the Celery Crop

A. McInnes, London, Ont.

FOR the production of celery there is no fertilizer that is so satisfactory as well rotted barnyard manure. It not only furnishes plant food for growing the crop but improves the mechanical condition of the soil by the addition of humus. The action of barnyard manure is rather slow and it is often desirable to supplement the manure by an application of commercial fertilizers.

If fresh stable manure is used it should be plowed under in the autumn. If the manure is well rotted, it may be plowed under early in the spring or used as a top-dressing a short time before planting. If the manure is plowed under the land should be re-plowed a short time before planting in order to bring the manure to the surface. From ten to twenty bushels to the acre should be applied each year the land is planted to celery. An application of five hundred to eight hundred pounds of common salt to the acre is desirable. Celery will take up a limited quantity of salt and its flavor is improved thereby.

One or two tons of high-grade fertilizer to the acre may be profitably applied on most soils in addition to the stable manure. As a rule, the quick-acting fertilizers are used. A suitable mixture for growing celery should contain about six per cent. of nitrogen, five per cent. of phosphoric acid, and ten per cent .of potash. Scatter it in the rows, and work it into the soil by means of a harrow or cultivator.

In the preparation of the rows it will be sufficient to apply between two and three quarts of high grade fertilizer to every rod of row to be planted, working the fertilizer into a strip of soil twelve to eighteen inches in width. After the celery plants have become well established their growth may be hastened by making frequent light applications of nitrate of soda to the surface of the soil before cultivation. As a rule the land should be plowed several weeks before planting, and the plowing should be very deep and thorough.

A few days before the land is required for planting, the surface should be cut with a disk or cutting harrow followed by such tools as are necessary to pulverize the soil to a depth of five or six inches, and just before planting the land should be rolled to secure an even surface. Commercial fertilizers should be applied while fitting the land for planting and should be well mixed with the surface soil.

The rows in which the plants are to be set should not be marked until a short time before planting in order that the soil may remain fresh.

The first and most important consideration when preparing to grow a crop of celery is the securing of good seed from selected stock and true to name. Pay the highest price, if necessary, and demand the best. Sow the seed for an early crop from February first to March tenth.

The best plan is to secure a wooden flat or tray about twelve by sixteen inches in size and two or three inches deep, with several small holes in the bottom for drainage. After filling with sifted soil for the seed bed, level it off even with the top, and either shake down the soil or press it down by means of a board before the seeds are sown. Either sow in drills two inches apart or scatter broadcast, and cover the seed by sprinkling through a fine sieve a very small quantity of leaf mold or sand. The tray can be placed in the window of a moderately warm room and watered by sprinkling very lightly as often as necessary to keep the surface from showing dryness, but the soil should not become waterlogged. The seedling will appear in from two to three weeks, after which the tray should be turned around once each day to prevent the plants drawing toward the light.

Sow for a late crop from April tenth to May tenth in drills ten or twelve inches apart and cover very lightly by sifting soil or by passing a roller along the drill after the seed has been dropped. When the seedlings are well started they may be thinned out and allowed to remain until planted in the field. Plants grown in this manner require very little attention as they can be worked by means of a wheel hoe or other hand cultivator.

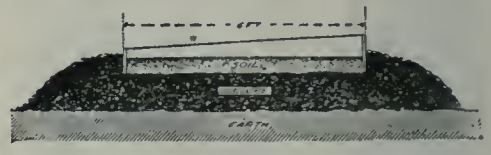
Hotbeds: Their Construction and Use

Prof. E. M. Straight, Macdonald College, Que.

We are now approaching that magic time of year when hotbeds are much in evidence. There is a certain satisfaction in working with hotbeds. The grower has been "frozen up"—more or less dormant during the winter. The hotbed offers to him the first opportunity of working off some of this surplus energy. Greater than all else is the advantage which the gardener secures in time; for by the hotbed he is enabled to secure a crop in advance of its normal season. To this problem the grower is obliged to bend his every effort, for the price which he obtains for most produce depends upon the season in which it is put on the market. On many markets string beans bring two dollars and fifty cents a bushel at the first of the season and thirty cents at the end, if they bring anything at all. This condition prevails with most market garden crops to a greater or lesser extent. The hothouse offers great advantages, but the initial expense in putting these up is so great that we hesitate to recommend them; but to the man who can afford neither hothouse or glasshouse the hotbed solves the problem, and offers advantages which he cannot afford to neglect.

The hotbed consists of an enclosure covered with sash and supplied with some form of heat. This heat may be supplied by means of hot air furnaces, lanterns, exhaust steam, or fermenting manure. Hot manure is the common method of heating the bed and is one of the best. The idea is not new, for it is said that the Egyptians used heating manure for the forcing of vegetables, in peculiarly constructed pits covered with talc tiles.

The hotbed used in commercial work measures six by twelve feet and is spoken of as a "frame." Such a frame is covered with four "sash," each measuring three by six feet. These frames are usually placed end to end in continuous rows with walks between. The walks vary much in width. We believe that a seven



Cross Section of Temporary Hotbed

foot passage is quite sufficient, although some growers allow ten feet. With a seven foot walk, about two hundred and eighty frames may be used to the acre. The cost will depend upon the price of lumber and the price of labor. If the grower is "handy" with tools he may cut down the expense of starting very much.

THE PIT REQUIRED

The frames may be placed on a manure pile, but it is preferable to have a pit beneath the frame in which the manure is placed. The pit should be somewhat wider upon either side than the width of the frame, and should be about two feet deep. It may be walled with stone or brick.

Drainage must be provided for. On the ground is placed a layer of coarse material such as gravel to keep the manure from the ground. The manure is placed directly on this. The amount will vary, depending upon the kind of manure, the time of year, and the degree of heat you are obliged to maintain. If a large amount of manure is needed it will be necessary to obtain it from the livery stables, for manure which has burned out is of no value for the hotbed. Alter-

Melon Frames as Used at Macdonald College, Que.

nate forking over and compacting for two days is advisable so that every part will be heating uniformly, or the bed will burn out in spots while the remainder is cold.

Put in the manure in layers and tramp it down before another layer is put on. Twelve inches of manure is enough in the springtime, but it may be necessary to use twice that amount at some seasons. Above the manure a layer of leaf mould is often placed, which serves as a distributor of heat. On this, five inches of rich garden loam, in which the seeds are planted, is thrown in and carefully levelled. The sash are placed in position, but the seeds are not sown at once.

During the first days the heat goes up to ninety degrees, but it is not safe to sow the seed until the mercury drops below eighty, and much below that for such cool crops as lettuce and radish. Banking the bed with manure or soil is advisable if run during cold weather, and covering the bed at night with burlap, or like material, is essential during the early season. Various hotbed mattings are sold by dealers in gardener's supplies.

Cross Section of Permanent Hotbed with Enlarged Pit

There is no branch of farm work which needs greater attention than that of handling hotbeds. An hour's delay, when the plants need water, or ventilation, or heat, or shade, or the thousand and one other little operations which go to make up the daily routine of the market gardener's life, is usually fatal.

He must see to it that he has sufficient heat and that he will be able to maintain it so long as required. The water supply must be abundant and constant; the sash must move easily to facilitate watering and ventilating. A wind break, such as a hedge or board fence between the beds and the prevailing wind, is a great conserver of heat. Lastly, they must be near the house. This saves time and energy and should not be neglected.

The frames are usually made eighteen inches high on the back and twelve inches on the front. They are always placed so that the glass is sloping toward the south. The six inches of fall provides for this. The frames may be made by the grower, but as a rule the sash can be purchased cheaper than it can be made locally, and are on sale by seedsmen and dealers in garden supplies. White pine and Cypress is commonly used in the construction. Cypress will cost more than the pine, but is more durable.

COLD FRAMES

Cold frames are exactly the same as hotbeds except that they are not provided with bottom heat. The heat of the sun is quite sufficient at this time for the purpose. Plants are taken from the hotbed to the cold frame and are thus hardened before going to the open field.

The question of double glass has received some attention of late years. It has been claimed that if sash are used with glass on either side, and an inch air space between, that all covers may be dispensed with. Our own experiments with double glass would show that too much has been said in favor of these. The double glass has the advantage of about two degrees and not more. The sash cost more, are heavier, and the advantage of two degrees is more than offset by these disadvantages. True, two degrees of heat are often of great importance, but we think that it may be obtained much more easily by a burlap cover, and with less expense.

Hotbeds are worth the trial. They are interesting, and thousands of gardeners will testify that they pay.

Fertilizers for Potatoes

Recently the average gain from 750 pounds of a complete fertilizer used in 107 experiments in Canada was 85 bushels per acre, which at 50c. per bushel for the potatoes and retail prices for the fertilizer would leave a gain of $28.00 per acre after deducting the price of the fertilizers. The fertilizer used was a mixture of 150 pounds of nitrate of soda, 400 pounds of acid phosphate and 200 pounds of sulphate of potash, which will analyze out about 3½ of nitrogen, 7½ phosphoric acid and 13 per cent. of potash. This latter can be taken as a good general, all round potato fertilizer, and will probably give results on a greater variety of soils than any other combination.

In Maine, which produces the highest yield per acre of any state in the Union, a 4-6-10 fertilizer is very generally used. I remember some years ago in talking with a manufacturer of fertilizers in the Maritime Provinces, he told me that he did not license a formula like the above in Canada, but did in Maine; and when asked the reason, he said that the Maine people knew what they wanted and were willing to pay for it. The Maine potato grower uses from 1,500 pounds to 3,000 pounds per acre.

In New York State, another heavy potato growing state, a 2-8-10 fertilizer is more generally used than any other. Where barnyard manure is available, a thousand pounds of a 10-8 goods, ten per cent. of phosphoric acid and eight of potash, is generally used.

Most of the successful vegetable growers I know are men who were at one time plasterers, brick-layers, masons or engaged in other similar lines of work. Finding that they were not making headway in the city they secured a little cheap land outside the city where they scratched away for a year or two until they began to get on their feet. Now they have good homes and are well-to-do.—J. W. Rush. Humber Bay, Ont.

Test the seeds if it has not already been done, and order early.

Start the hotbed and be sure that the temperature is uniform before sowing seed.

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4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.
5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.
6. Advertising rates One Dollar an Inch. Copy received up to the 18th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.
7. Articles and Illustrations for publication will be thankfully received by the editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of the Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,623
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant, we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed
THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

THE FRUIT CONFERENCE

The third Dominion Fruit Conference, held in Ottawa last month, proved an inspiration to all who attended. While it was generally realized that the fruit interests in the various fruit-growing provinces have shown a great advancement during the past few years, one needed to be present to realize and appreciate the spirit of optimism and ambition that pervaded the various sessions of the conference. It was evident that this spirit was but a reflection of the views held by the fruit growers in all our leading fruit districts, as these districts were represented by the delegates at the conference.

So much has been heard during recent years of the wonderful strides that have been made in the growing of fruit on the Pacific coast it was refreshing to find that the fruit growers of the east were wide awake also and determined to prove that their sections are capable of producing as fine fruit as can be grown anywhere. They were confident, also, that from now on the east will rapidly become an important factor in the growing and marketing of fruit of the highest quality. The splendid quality of the fruit from the different provinces that was on exhibition proved that there is now a general understanding in all our provinces of what constitutes high class fruit as regards color, size and methods of pack.

The success of the conference cannot be judged by the business transacted, important as it was. The greatest benefit derived will flow from the impression made by the gathering on the delegates themselves. These men have returned to their respective provinces impressed with the knowledge that their local governments, fruit growers' associations and brother growers must be up and doing if they are to hold their own in the march of progress now so manifest throughout Canada. The effect of their influence in this direction during the next few years can hardly be overestimated.

In harmony with the new national spirit so manifest throughout the sessions three most important decisions were reached. One of these was the advocation, in a manner that would not be denied, of the separation of the fruit from the dairy and cold storage divisions of the Dominion Department of Agriculture. It is proposed that a commissioner shall be placed in charge of this department who will have not only a practical knowledge of fruit growing, but greater freedom of action and direct approach to the minister of agriculture not now allowed to the chief of the fruit division in the subordinate position that he holds. The conference made it clear that this is a condition of affairs that requires to be remedied. In line with this resolution was the action taken to form a national fruit growers' association and to facilitate the holding of a national apple show. When the Dominion Department of Agriculture has a fruit commissioner enjoying the powers such an official should possess, backed up by a national fruit growers' association and the holding of national apple shows, the fruit interests of Canada will receive the attention they deserve and we may expect to see Canada become as noted for its fruit as for any of its other great natural resources.

A PLEASING CUSTOM

A pleasing feature of the recent general observance on this continent of the centenary of Charles Dickens' birth was the featuring in connection with it of the use of the scarlet geranium. It was the great author's favorite flower, and he grew it extensively in his garden at Gadshill. Special requests were issued to local Dickens committees by H. Snowden Ward, F. R. P. S., the commissioner to the United States and Canada from the Dickens' fellowship of Great Britain, urging them to use the geranium in connection with the giving of Dickens dinners, dances and similar entertainments.

The growing favor that the observance of Mother's Day is meeting with is due in a large measure to the custom now connected with it of sending flowers on that day to our mothers or of wearing flowers in their honor. While the use of flowers in memory of Dickens may never be expected to reach the same proportions it is likely to assume in connection with Mothers' Day, still it is a movement that is in the right direction and one which lovers of flowers may well do their best to encourage. There is no better way of extending the love of flowers.

SURPRISING APPOINTMENTS

Ontario's Minister of Agriculture, Hon. James Duff, during the past two or three years, has been subjected to considerable severe criticism at the hands of Conservatives and Liberals alike. It has been claimed that since his assumption of the portfolio, the department of agriculture has been characterized by a lack of progressiveness and inability to appreciate the needs and importance of the industry it represets. Nothing the Minister of Agriculture has done has so justified such criticisms as the recent appointments he has made to fill the vacancy created by the resignation of the provinces' talented Deputy Minister of Agriculture, Mr. C. C. James, Hon. Mr. Duff has appointed two deputy ministers. There was no more need for such action than for adding a fifth wheel to a cart. The deputy minister who has been appointed to assume the main direction of the work hitherto done by Mr. James is a young man who, until comparatively recently, was a reporter on a Toronto daily paper. He is absolutely without the necessary qualifications to enable him to hold the position which he now occupies. The idea of putting such experienced men as Dr. G. C. Creelman, Mr. G. A. Putnam, Mr. P. W. Hodgetts, and others under the direction of such an official, is so ridiculous as to be amusing, if it was not apt to be attended by the most serious consequences

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The members of the Goderich Horticultural Society have adopted the pansy as a flower which it is proposed shall be grown so extensively in the city as to make the city noted on this score. This is an idea which other horticultural societies and cities might well adopt. Were the growing of other flowers, such as roses, hydrangeas, peonies and many others that might be mentioned, to be made a specialty of in different communities, a civic pride would be created in the cultivation of such flowers which would add greatly to the beauty of such cities and to the pleasure of the public. The Ontario Horticultural Asso-

ciation, and similar bodies elsewhere, might well consider the adoption of means to ensure the example that has thus been set being followed in other municipalities.

The proposal to hold a National apple show in the city of Montreal. under the auspices of the Pomological and Fruit-growing Society of the Province of Quebec, has much to commend it. Montreal is convenient to Ontario, the province of Quebec and to the Maritime Provinces, and its selection should prove acceptable to the fruit growers of the west. In spite of the splendid advantages the province of Quebec possesses for the growing of certain high class varieties of fruit, less is being done by that province to encourage fruit growing than by any other fruit growing province in the Dominion. The holding of a National apple show in Montreal would have the effect of setting new standards for the fruit growers of that province and of calling attention to its possibilities for fruit production. The city of Montreal should give liberal financial assistance to the exhibition, and thereby assist in making it an even greater success than the great apple show held a little over a year ago in British Columbia.

The proven ability of the fruit growers of the west to advertise their great resources probably led some who attended the recent conference of fruit growers in Ottawa to expect much in this direction from the delegates from the west. It came somewhat in the nature of a surprise, therefore, to find that the little delegation from Nova Scotia made more noise about the wonderful apple crop their province produced this year and concerning what it is going to produce in the course of the next few years, than practically all the other delegates put together. They made it clear that Nova Scotia will have to be reckoned with from now on. The Ontario delegates did not say much, but we venture to assert that not much escaped them, and that they will undertake to see that Ontario's development in the growing and marketing of fruit during the next few years will be something that the other provinces will have to sit up and take notice of.

A Magazine Without Ads.

Publishers of magazines, such as The Canadian Horticulturist, are sometimes asked, "Why do you not cut out all your advertising and give us a magazine containing nothing but reading?" There are two reasons why in general publications this is not done or even attempted.

One reason is that publishers could not discontinue publishing advertisements without having to increase the subscription price of their periodicals enormously. Most people little realize the amount of expense involved in publishing a single number of a paper such as The Canadian Horticulturist. In the majority of publications of this character the amount of money received for each subscription does not begin to pay even the cost of the white paper and the printing of the paper. The balance of this has to be made up out of the advertising receipts. And the printing is, of course, only one of the many items of expense in connection with publishing a magazine. All these other items have also to be paid out of the money received for advertisements. Were there no advertisements in The Canadian Horticulturist the subscription price would have to be raised to about three times what it is now. Lots of publications would have to increase their subscription price five or six times.

Readers of The Canadian Horticulturist know they can depend on the advertisements appearing in its columns. They know we do not accept or print unreliable, questionable or objectionable advertisements. They know they can depend on getting a fair deal from an advertiser in The Canadian Horticulturist. That explains why our advertisers have found that The Canadian Horticulturist can help them to increase their business, and why the best firms in their respective lines are represented regularly in its advertising columns.

We do not admit advertisers to our column except such as we believe are thoroughly reliable.

PUBLISHER'S DESK

The February issue of The Canadian Horticulturist established four new records. It was the largest issue we have ever printed. It was the first issue, the cover of which was printed in four colors. It was mailed to the largest number of paid subscribers in the history of the paper. The value of the advertisements carried exceeded those in any previous issue. This, if the expression may be permitted, we feel was going some. And yet the issue was but a reflection of the wonderful extension that is taking place in the fruit and general horticultural interests of Canada.

This issue of The Canadian Horticulturist is being mailed to almost three thousand more subscribers than The Canadian Horticulturist had just a year ago at this time. The circulation of The Canadian Horticulturist is now almost 11,500. This accounts for the fact that we are printing larger and better issues of The Canadian Horticulturist than ever before. This is in accord with what we have frequently told our readers, that as the circulation and advertising patronage increased we would be able to make many improvements for the benefit of our readers. Our readers will make still further improvements possible by speaking favorably of The Canadian Horticulturist to their friends and by patronising our advertisers, at the same time telling them where they saw their advertisements.

The April issue of The Canadian Horticulturist will be our gardening and spring planting number. We expect once more to print the cover in colors and to fill the issue from cover to cover with timely interesting articles, dealing largely with the garden. The first pronounced symptoms of the gardening fever generally make themselves noticeable in connection with the average amateur gardener during the month of April each year. Anticipating a recrudescence of this ailment, we are planning a prescription for the patients which will take the form of articles in which they are sure to be interested. These include one entitled "The cultivation of the garden," by Mr. J. McPherson Ross, of Toronto; another on garden work in the spring, by Miss M. E. Blacklock, of Toronto, whose interesting description of Mr. Child's garden appears in this issue, an article entitled, "Seed sowing and transplanting," by Mr. William Hunt; "Garden Notes," by Mr. E. I. Mepsted, of Ottawa; a special article, entitled "Fertilizers for flowers," by Mr. F. T. Shutt, of the Experimental Farm, Ottawa, and others too numerous to mention in detail. These articles will be profusely illustrated. In the vegetable department will appear an article entitled "Planning and preparing the vegetable garden," by Mr. W. J. Kerr, of Ottawa. In spite of these special feature in the floral section the fruit pages will not be overlooked. In them will appear an article by Mr. W. T. Macoun, Dominion Horticulturist, entitled "Growing small fruits in the orchard," and one entitled "April work in the orchard," by Mr. Grant S. Peart, of Burlington. We anticipate that our April number will be one of the best issues of the year.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

Orangeville

The recently organized Horticultural Society at Orangeville is starting out on right lines. Besides the distribution of premiums to its members, it is the intention to hold regular meetings throughout the year, at which questions placed in the question box will be discussed and answered if possible. Matters dealing with home and public improvement will also be discussed. Among the various suggestions presented by the directorate for consideration have been the following:

Encouraging the planting of more evergreens on home grounds and in unsightly places about the town.

Cooperating with the municipal council in adopting a uniform system of graded boulevards, in the cutting of grass, in the selection and care of trees, in street planting and the destruction of various weeds.

Advocating the improvement of Mill St., the main approach from the C.P.R. station to Broadway, by the removal of fences, the proper grading of lawns and boulevards to the sidewalk line, and by the planting of deciduous trees where needed.

Cooperating with the C.P.R. in beautifying the approach to the station and corners by planting of trees and shrubs.

At a recent meeting, Prof. H. L. Hutt, of Guelph, gave an illustrated lecture on "Home and Town Improvement."

Port Dover

Our society is progressing. We hold a flower and fruit exhibition every year, and give flower seeds to school children. The children take great pride in cultivating and exhibiting their flowers. Our expenditure last year was $328.83, and we hope to exceed that amount this year.—Jas. Symington, Secretary.

The Third Dominion Fruit Conference

FAR-REACHING results should follow the third Dominion conference of fruit growers that was held in Ottawa, February 14-16. The discussions that were held and the resolutions that were passed were fraught with much of importance to the fruit interests of Canada.

The conference was called by the Dominion Minister of Agriculture, Hon. Martin Burrell. It was thoroughly representative in nature, delegates being in attendance from all the provinces of Canada. They represented the various fruit growers' conventions, apple shippers' associations and provincial departments of agriculture. In addition to the delegates a number of representative apple growers and shippers were present from several of the provinces at their own expense. All present were allowed to join in the discussions, but only delegates were permitted to vote.

GREAT THINGS EXPECTED

The various meetings were buoyant with optimism and breathed a national spirit that was very apparent. Every delegate present was charged with the conviction that the fruit interests of his province are on the eve of a wonderful development. The confidence in the future of the industry this feeling inspired had its counterpart in the manifestation of a national spirit which led all the delegates to evince a keen desire that the fruit growers of the various provinces shall work in harmony with one another, and as far as possible under uniform laws pertaining to the handling and marketing of their fruit.

A feature of the conference was a splendid display of apples comprising about one hundred and fifty boxes gathered from each of the fruit growing provinces of Canada.

Honorable Martin Burrell

Who called the Conference and who presided at several of the sessions.

There were also several boxes of fruit from the famous Hood River district in Oregon, the state of Washington, and the state of Virginia. In addition, the Dominion Experimental Farm at Ottawa had an excellent exhibit of Fameuse apples and an attractive selection of plate fruit representing various seedlings originated at the Central Experimental Farm, Ottawa. Manitoba was represented by two boxes of fruit.

The fruit from the different provinces was richly colored, high grade in quality and well packed. It afforded opportunities for comparison of fruit from the different provinces. The display made it manifest that while some provinces may produce more box fruit than others, still each of the provinces is able to produce fruit that will compare favorably with the best fruit from any other section. The fruit in the exhibit had been collected by the government from the different provinces and shipped to Ottawa, where it was all repacked by the same packers. It showed the possibilities of the cold storage of fruit and reflected credit on the Dominion Department of Agriculture which had arranged the exhibit. The exhibit was banked on the platform facing the delegates, where it made a most attractive display. An illustration of this exhibit appears on page 57.

HONORED GUESTS

A feature of the conference was provided by the attendance of His Royal Highness, the Duke of Connaught, Governor-General of Canada, at one of the afternoon sessions

Cheap Roses

If you want Roses that will do anything at all then don't *experiment* with cheap slips and cuttings bought from so-called Nursery concerns, but buy *two year* old Canadian grown plants from *reputable* Rose growers, who have raised them on their own nurseries and not imported them. Imported gowns may be attractive and alluring, but imported Roses and Shrubs are by no means satisfactory.

The climate of France and Holland is quite different from ours and plants from these countries feel the change sorely. Roses and Shrubs offered at "Bargain Counter" rates have undoubtedly been imported from England, France or the Netherlands, and are expensive even at the lowest prices.

Buy your Roses, Shrubs and trees from reputable nurserymen growing stock in your own latitude

Our selection of Roses, Shrubs, Trees and Plants is complete, and lists and prices will be cheerfully furnished on application.

THE CANADIAN NURSERY CO. LIMITED

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SPECIAL GLASS FOR GREENHOUSES

Conservatories of The Dale Estate, Brampton, Ont.
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GOOD QUALITY, FLAT, EVEN THICKNESS, AND WELL CUT

We make a specialty of supplying Glass for vegetable forcing houses

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and of the Right Honorable R. L. Borden, Prime Minister of Canada at one of the evening sessions, both of whom spoke. Honorable Mr. Borden assured the delegates that it is the intention of the Dominion government to promote the cause of agriculture in every way possible.

THE DISCUSSIONS

Owing to the limited time at the disposal of the delegates and the numerous important matters that had to be discussed, it was found necessary to conduct much of the business of the conference in committee meetings. This permitted more work being accomplished than would otherwise have been possible. Nevertheless there were a considerable number of lively preliminary discussions as well as discussions of the committee reports, all of which were conducted in the best of good spirit and which were productive of definite, beneficial results.

THE RESOLUTIONS

The conference resulted in the passing of important resolutions, most of which, it is hoped, will be crystallized into legislation by the Dominion government. The resolutions passed and decisions reached included the following:

A NATIONAL ASSOCIATION

To form a National Fruit Growers' Association. Steps to this end were taken, preliminary officers elected and a partial constitution adopted. It is expected that the Dominion Government will make a small grant to help defray the expenses of this association.

Instructions were given to the officers of this association to appoint a transportation committee of three members to look after the interests of the fruit growers with the railway companies and power was given to the committee to appoint an expert transportation agent to investigate claims and railway and express rates and other similar matters.

STANDARD BOXES

It was decided to ask the Dominion government to make the standard apple box now used for the export trade the standard box for domestic use also. There being considerable difference of opinion as to the most suitable shapes for the other various box packages of fruit, it was decided to defer making recommendations concerning these in order that the various fruit growers' organizations may investigate the matter and report later with recommendations. The Dominion Department of Agriculture was asked to undertake the organization of the investigation. It was resolved that whatever size may be determined on for the pear box shall be made the legal size also for crab apples.

The Dominion government was requested to issue forms to basket manufacturers so as to ensure a uniform size of fruit baskets.

It was recommended that the four-basket plum tray 15¾ by 15¾ by 4½ in. inside measurement should be made the legal size for Canada.

STANDARD BARRELS

The government was urged to provide two standards for apple barrels, one the 96-quart barrel, commonly used in Nova Scotia, and the other the 112-quart barrel, commonly used in Ontario. The Department of Agriculture was requested to provide for the enforcement of the use by all growers and dealers of one or the other of

Douglas Gardens

Oakville, Ontario

OUR 1912

Spring Planting List

NOW READY

describes and offers, amongst other good things:

ANEMONE JAPONICA, 4 varieties, at 15c. per plant.
CLEMATIS RECTA, at 20c.
DICENTRA (Bleeding Heart), at 15c.
GYPSOPHILA (Baby's Breath), at 15c.
HARDY GARDEN PINKS, 4 varieties, at 15c. per plant.
HEMEROCALLIS (Day Lily), 4 varieties, at 15c. per plant.
KNIPHOFIA (Flame Flower), at 20c.
SPIREAS, 8 varieties, at from 15c. to 35c per plant.
TROLLIUS JAPONICUS fl. pl (Globe Flower), at 15c.
YUCCA FILAMENTOSA, at 25c.
SHASTA DAISIES, 3 varieties, at 25c per plant.
GLADIOLUS, 14 named varieties, at from 4c. to 30c. per corm.
GLADIOLUS, Groff's Hybrids, unnamed, at 10 for 25c.
GLADIOLUS, Groff's Hybrids, a very fine light colored section, at 25 for 75c.
GLADIOLUS, Groff's Hybrids, red and scarlet section, at 25 for 60c.
ISMENE CALATHINA GRANDI (Peruvian Daffodil), at 20c. per bulb.

These prices include carriage to destination.

Also a fine assortment of China Asters, Antirrhinum (Snapdragon), Salvia. Stocks, &c., for Bedding purposes.

Mailed free to all on our Mailing List and to others interested who send names and addresses.

JOHN CAVERS

The trees were the best rooted we ever saw and every one of them grew — *Howard G. Fisher.*

Auburn Nurseries Pedigreed Peaches

2 Years Old. Grown by G. E. Fisher & Sons Dulverton Fruit Farms, Queenston, Ont.

These are the kind of trees to buy. No storage stock about these, but the thrifty, healthy, sturdy kind that stand in the nursery row all winter, and are fresh and bright in the spring, and reach you in fit condition to start right into business. We still have a good stock of Peach, Cherry, Pear and Plum, Yearling Apple and Quince.

AUBURN NURSERIES

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GOOD CROPS

ARE OBTAINED BY USING

THE BEST MANURE

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SURE GROWTH COMPOST

makes poor land fertile, and keeps fertile land most productive. Supplied by

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means on a farm or garden tool the world over that it is the latest-improved, lightest, strongest, most useful and economical tool of its kind. With Planet Jrs come

Less work—bigger crops—more money

They make you independent of slipshod help and give you time for rest and enjoyment besides. 55 Tools; guaranteed. Designed by a practical farmer; used throughout the world.

No. 25 **Planet Jr Combined Hill and Drill Seeder, Double Wheel Hoe, Cultivator and Plow** has automatic feed-stopping device, valuable seeder index and complete set of cultivator attachments. Indestructible **steel frame.**

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FREE! A 64-page illustrated farm and garden book!

Keep up to date!. Learn the latest and most valuable farm and garden information by sending for this Planet Jr book. It describes also 55 tools for all uses. **Write postal for it today!**

S L Allen & Co

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Write for name of our nearest agency.

Why Don't You Plant EWING'S Reliable Seeds?

What's the use of giving your land, your time and your work for a season for anything less than the *best* crops? Ewing's Reliable Seeds have proved, for more than forty seasons, favorable and unfavorable, that they will produce the biggest crops of the best quality. Ask your neighbors who plant Ewing's Seeds all about them. Plant them yourself this spring and get the full reward for your work. Your dealer should have Ewing's Reliable Seeds, but if he hasn't, write for our illustrated catalogue and order from us direct.

16

EWING'S RELIABLE SEEDS MONTREAL

WM. EWING & CO.,
SEEDSMEN
McGill St., Montreal.

Peerless Poultry Fence Protects

We build Peerless Poultry Fence strong enough to keep marauding animals out and sufficiently close to keep small fowl in.

A Real Fence That Gives Real Service

Built same as farm fence of good galvanized wire, protecting it against rust. Top and bottom No. 9 heavy, hard, steel wire—intermediate horizontal wires No. 12—stays No. 13, 32 to the rod. This makes an excellent, all around, general purpose fence suitable for turning all classes of stock.

Agencies nearly everywhere. Live agents wanted in unassigned territory.

The Banwell Hoxie Wire Fence Co., Ltd., Winnipeg, Manitoba, Hamilton, Ont.

these standards and that the manufacturers be held responsible for their size.

NATIONAL APPLE SHOW

The advisability of holding national apple shows was conceded and the Dominion government was asked to appropriate $10,000 towards the expense of the next National Show, provided at least $20,000 in prizes is offered by the promoters.

The government was requested to have daily market prices for fruit cabled from their commercial agents in Europe and published in the daily papers in all provinces of the Dominion during the shipping season.

The Minister of Agriculture was reminded that the fruit interests of Canada are now of sufficient importance to warrant the placing of the fruit division on the same basis as the seed and live stock divisions with a commissioner appointed in charge.

The sufficient inspection at point of entry of imported deciduous fruit was urged so as to ensure its being marketed under the conditions of the Sales and Inspection Act.

FRUIT INSPECTORS

The Minister of Agriculture was requested to investigate the possibility of giving to applicants, on payment of a reasonable charge, a certificate of the results of any inspection made.

It was recommended that when an inspector has examined a closed package of fruit that it be stamped with the word "inspected" and the number of the inspector.

THE NUMBER OF APPLES

The amendment of the Fruit Marks Act was urged in order that it may be made compulsory to mark,, on the outside of the box, the number of apples contained therein.

The Department of Agriculture was urged to divide the fruit growing provinces into suitable districts with a permanent and capable fruit inspector and instructor in each district so as to ensure, to the greatest possible extent, inspection at the point of shipment.

MINIMUM SIZE FOR APPLES

The amendment of Section 321, clauses two and three, of the Inspection and Sales Act, was urged in order that a minimum size of apples packed in barrels may be established as follows: The Fameuse, two and three-eighths inches for number one, two inches for number two.

Golden Russets and kindred sized varieties, two and three-eighths inches for number one, two and one-eighth inches for number two.

Baldwins, Spys, Greenings, Ribstone and kindred sized varieties, two and one-half inches for number one, two and one-quarter inches for number two.

Kings, Blenheims, Wolf River and kindred sized varieties, two and three-quarter inches for number one, two and one-half inches for number two.

It was recommeded that where a packer of apples in barrels desires to establish a higher minimum standard for a portion or all of his pack he may do so by stamping or stencilling on the face end of the barrel the minimum diameter in inches and fractions thereof and that the diameter so marked shall be the minimum standard of size for such barrel.

DELEGATES PRESENT

The representative nature of the conference is best shown by the list of the dele-

Strawberry and Raspberry PLANTS

All the Leading Varieties
HOME GROWN

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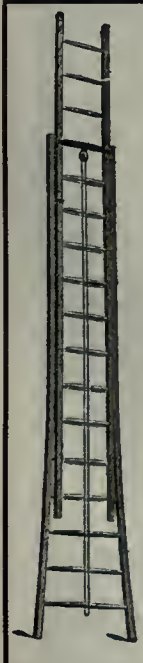

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It is the safest and best on the market. Fitted with automatic hooks that lock at every rung and unlock between the rungs
It is
LIGHT, STRONG
EASILY OPERATED AND DURABLE

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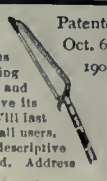

Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address

FRUITGROWERS' SAW CO., Scottsville, N. Y.
Representative for Ontario, Jas. E. Johnson, Simcoe, Ont.

Make Your Own Spray

Home Boiled Lime Sulphur is being used in increasing quantities by leading fruit growers and fruit growers' associations. They find that by making their own spray they can effect a considerable money saving, and at the same time produce a preparation that will do the work thoroughly.

It is an easy matter to make home boiled lime sulphur. The chief essential is a proper spray cooker. We manufacture two kinds of cookers, one with a single tank, and one with a double tank. (See illustration.) They are designed especially for this purpose, and will give the greatest efficiency with the greatest saving of fuel. They can be used for either wood or soft coal.

The tanks are made of heavily galvanized steel, thoroughly rivetted and soldered. Will not leak. They are built to give satisfaction, and are **guaranteed.**

Made in five sizes, capacity 30 to 75 gals. Prices and full particulars on application. Get your outfit now. Write us to-day.

STEEL TROUGH AND MACHINE CO., Ltd., TWEED, Ont.

How Do YOU Spread Manure

THE above illustration shows the difference in crops, between the I H C way of spreading manure—and the pitchfork method.

The pitchfork way is slow, hard, and disagreeable, wastes much of the value of the manure, and the results hardly justify the labor and time invested.

The I H C Spreader cuts the manure into fine shreds, spreads it evenly, and makes the work easy. Spreading manure the I H C way is bound to result in better soil, bigger crops, and more profits.

I H C Manure Spreaders

Corn King—Cloverleaf

are simple, strong, and durable. They have many advantages that make them superior to other spreaders.

All working parts are extremely simple and wonderfully strong. The beater driving gear is held in a single casting, so that there is no binding—no cutting of parts caused by the gears springing out of alignment. The roller-bearing support for the apron reduces the draft. The levers are convenient. The feed changing device can be shifted quickly and easily. The wide range of adjustment allows you to spread manure heavy, medium, or light, as your judgment tells you is best for the soil.

Whether you have a large or small farm, or want a spreader for orchard use or truck gardening—there is an I H C that will suit your requirements. Why not see the I H C local agent at once? Get a catalogue from him, or, write nearest branch house.

CANADIAN BRANCHES—International Harvester Company of America at Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, North Battleford, Ottawa, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton.

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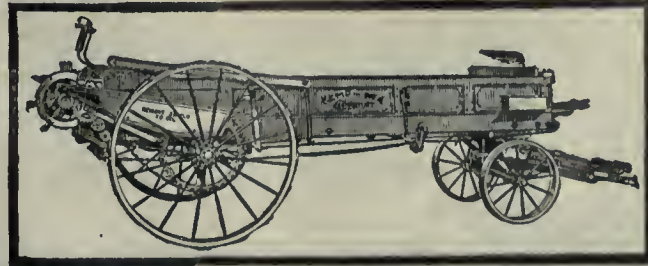

I H C Service Bureau

The purpose of this Bureau is to furnish farmers with information on better farming. If you have any worthy question concerning soils, crops, pests, fertilizers, etc., write to the I H C Service Bureau, and learn what our experts and others have found out concerning these subjects.

Gladioli

GLADIOLI are now the most popular of summer flowers, nothing being equal to them for table decoration. We have a large stock of the best varieties and most valuable mixtures.

Groff Hybrids are still the best we can find and they are making their way all over the world, **seven or eight acres now being grown at Simcoe,** largely for export. **Also Cannas, Dahlias, Paeonies and General Nursery Stock.**

CATALOGUE on application to

Campbell Bros. Simcoe, Ont.

Strawberry Plants

FOR SALE

Choice Plants at reasonable prices. We have Early Ozark, Fendall, Barrymore, Silver Coin, Pocomoke, Aroma, etc., of newer varieties.

We also have Dunlop, Williams, Warfield, Brandy Wine, Bederwood, William Belt, Glen Mary, etc., of the old favorites.

Our free list tells all about them.

Order early as plants are scarce.

Ontario Nursery Co.

Wellington, Ont.

Try the BISSEL in your orchard and see what a real orchard disc harrow will do. Stays right down to its work. Has a lever for each gang, so that one gang can be adjusted to cultivate more than the other when required. Attach wings and it extends over 12 feet wide Reversible—In-throw to Out-throw. Call on local dealer or write Department N for Catalogue.

The Bissell T. E. BISSELL CO. LIMITED ELORA - - ONT. ORCHARD DISC

gates who were in attendance. They were as follows:

Ontario.—Representing the Fruit Growers' Association: Harold Jones, Maitland; Walter Dempsey, Trenton; R. W. Grierson, Oshawa; L. A. Hamilton, Lorne Park; A. Onslow, Niagara-on-the-Lake; W. H. Bunting, St. Catharines; A. W. Peart, Burlington; D. Johnson, Forest, and Robt. Thompson of St. Catharines. P. W. Hodgetts represented the Department of Agriculture, and Prof. J. W. Crow the Guelph Agricultural College. The Ontario Apple Shippers' Association was represented by L. K. Shroud, Wellington, and M. C. Smith, Burlington, and the Cooperative Associations by Elmer Lick, Oshawa.

Quebec.—The Quebec Pomological Society was represented by Robt. Brodie, Westmount; R. W. Shepherd, Como; W. E. Jack, Chateauguay Basin; J. C. Chapais, St. Denis, and Charles T. Byers, Abbotsford. Mr. G. A. Gigault represented the Department of Agriculture; Prof. Saxby Blair, Macdonald College, and Father Leopold of La Trappe, the Oka Agricultural College.

Nova Scotia.—Nova Scotia Fruit Growers' Association was represented by R. J. Messenger of Bridgetown, A. C. Starr, Fort Williams; J. N. Chute, Berwick, and F. A. Chipman, Nictaux West. The United Fruit Companies were represented by C. O. Allen of Kentville, the Department of Agriculture by Prof. M. Cummings and the Truro Agricultural College by Prof. P. J. Shaw.

British Columbia.—The British Columbia Fruit Growers' Association was represented by W. F. Summers of Victoria; R. C. Abbot, Mission; R. H. Agur, Summerland; James Rooke, Grand Forks; W. A. Pitcairn, Kelowna, and Thos. Abriel, Naksup. The Department of Agriculture was represented by R. M. Winslow.

New Brunswick.—The Fruit Growers' Association was represented by C. M. Vroom, St. Stephen, and A. C. Parker, Burton; and the Department of Agriculture by A. G. Turney.

Prince Edward Island.—The Fruit Growers' Association was represented by J. A. Annear, Lower Montague, and by E. A. Dewar of Charlottetown; and the Department of Agriculture by Theodore Ross.

Manitoba.—Prof. F. W. Broderick.

THE SESSIONS

The conference was opened Wednesday afternoon by Dairy and Fruit Commissioner J. A. Ruddick, who drew attention to the fact that the first Dominion Fruit Conference was held in Montreal in 1890 and the second one in Ottawa in 1906. Only two delegates who were present at the first conference, were present at the last two also, Messrs. Robt. Brodie and R. W. Shepherd of Montreal.

A cordial welcome was extended to the delegates by Honorable Martin Burrell, the Dominion Minister of Agriculture, who styled himself a fellow fruit grower. Responses were made on behalf of the different provinces by Messrs. Hamilton for Ontario, Messenger for Nova Scotia, Agar for British Columbia, Turney for New Brunswick, Dewar for Prince Edward Island, Shepherd for Quebec and Broderick for Manitoba.

OBJECTS OF THE CONFERENCE

Hon. Sydney Fisher, former Dominion Minister of Agriculture, being present, was invited to take a seat on the platform and incidentally was twitted over a statement

(Continued on Page 78.)

Say, Isn't it fine to have an Independent Telephone in the House?

"Well, I should say so. Why, only yesterday, it saved me a long, cold drive to town. I just phoned the store, and they sent my stuff along by Sam Thompson."

"Did you know eggs were up again?" "Yes, Ike phoned me, and said pork was going higher, too. Guess we ought to ship ours."

"Say, Mary wants to talk to your wife." "All right—and Bill, won't the women folks enjoy these telephones?"

"Yes, it's worth the money, just to help them from being so lonesome. They say they get more news over the phone than they did at a church social."

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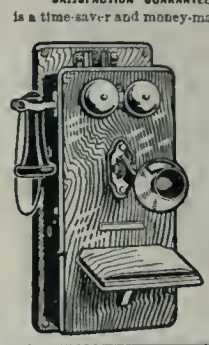
Independent Telephone
SATISFACTION GUARANTEED OR MONEY REFUNDED

is a time-saver and money-maker. It keeps you in touch with the market—brings help in case of illness or accident—makes farm life easier, brighter, happier, and more profitable.



You, and nine more men, can have your own telephone system—and operate and control lines and phones.

Our Free Booklet "How The Telephone Helps The Farmer," Edition No. 58 tells all about this. Write for a copy, read it—then get your friends together and talk over the proposition. But write to-day.

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LIVE STOCK, POULTRY AND DAIRYING business pays big, and is conducted at smaller cost than in other sections of the country. Luxuriant pasturage and green fields the whole year 'round make this possible.

ALFALFA GROWS abundantly in nearly all parts of the Southeast. Many acres produce 4 to 6 tons, selling locally from $14 per ton up.

APPLES, FRUIT, TRUCK AND COTTON are other big paying crops. Apple orchards net $100 to $500 an acre, and truck gardening $200 up.

CLIMATE UNSURPASSED—Every day in the year one can work in his fields. These long seasons allow raising two and three crops from the same soil each year.

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125 Egg Incubator and Brooder BOTH FOR $10
If ordered together.

Freight paid east of Rockies. Hot water, copper tanks, double walls, double glass doors. Free catalog describes them. Send for it today.

Wisconsin Incubator Co.,
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You Can't Grow Bugs and Good Friut on the same tree

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Not Sprayed

"Vanco" Lime-Sulphur Solution

IS STRONG, UNIFORM, CLEAR, EFFICIENT

It gives results every time because it is the most perfect Solution of Lime-Sulphur that expert chemists can devise.

"VANCO" LIME SULPHUR SOLUTION is the spray to use if you want your fruit trees to show a profit. It kills San Jose Scale, Fire Blight, Scab, Mildew and other parasites and fungi that destroy the buds.

Ready for use—clear—free of sediment—and does not clog the nozzle.

The specific gravity is stencilled on every barrel.

"Vanco" Arsenate of Lead

Will Keep Fruit Trees and Vegetables Absolutely Free of Leaf-Eating Insects

"VANCO" ARSENATE OF LEAD will destroy Codling Moth, Potato Bugs, Cabbage Worms, Asparagus Beetles, Canker Worms, and other destructive pests and WILL NOT BURN THE LEAVES.

It sticks to the leaves, even after two or three rains—sprays easily—does not clog the nozzle and is easily kept in solution.

Read the "Vanco" Book—it tells a lot of facts about sprays that you ought to know. Glad to send you a copy free.

FERTILIZERS—Muriate of Potash, Sulphate of Potash, Nitrate of Soda and Acid Phosphate—straight fertilizing chemicals of guaranteed analysis.

SAVE FREIGHT—by ordering Sprays and Fertilizers together and having both sent in one shipment.

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The Rosy Bloom On a Woman's Cheek

is the most alluring beauty in the world. It is a prize within reach of almost every woman, if she will but give proper attention to her skin and her general health.

The evil effects of raw winds, dust, extreme cold, working in overheated and steamy rooms or in bad air, can be counteracted by using

NA-DRU-CO
Ruby Rose Cold Cream

This is a snowy-white preparation with a delicate rose perfume. It cleanses the skin, nourishes and fills out the deeper tissues, smoothes out wrinkles and imparts a velvety softness, free from roughness, redness or chaps. It keeps the skin healthy, and Nature supplies the rosy bloom.

In 25c. opal glass jars, at your Druggist's.

NA-DRU-CO
Witch Hazel Cream

is a delightfully soothing preparation of Witch Hazel, presenting all its wonderful cooling and healing properties in a most agreeable form.

For the skin irritation which winter brings—chaps, wind-burn, cracked lips, frost-bites or chilblain—it is a remedy as pleasant as it is effective.

25c. a bottle, at your Druggist's.

Always look for the Na-Dru-Co Trade Mark when you buy.

National Drug and Chemical Co. of Canada, Limited. 182

FLOWER POTS
Hanging Baskets, Ferns Pans, Etc.

We have a large stock of all sizes on hand, and can ship orders without delay.

Order Now Before the Rush

Our pots are smooth and well burnt. We have our reputation to keep up.

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The Foster Pottery Company, Ltd.
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Paeonies, Phlox Gladiolus
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Azaleas, Magnolias and Rhododendrons

Trees, Shrubs, Roses, Vines, Tubers.

Write for new attractive catalogue. It's free.

A. W. Graham
St. Thomas - Ont.

(Continued from Page 76.)

he once made to the effect that the province of Quebec produces the best apples grown anywhere in Canada. In defence of this remark he laughingly contended that King George buys the apples for his personal use from Quebec. Hon. Mr. Fisher, who called and presided at the Conference held in 1896, stated that he had had three objects in view in calling it. The same objects he presumed had led to the calling of this year's conference. These were first, to find what were the needs of the fruit industry; second, to obtain the advice of experts, and third, to consider the best means of promoting the industry on broad national lines.

CO-OPERATION

Mr. Alex. McNeil, Chief of the fruit division, gave an excellent address on "Co-operation and Fruit Growing." He dealt with the present status and advantages to be derived by cooperation and defined some of the problems that confront those who desire to cooperate. Some of the successes that have attended co-operative associations were noted and suggestions offered for further and new lines of work. One of the principal points Mr. McNeill made was that there is a radical difference between joint stock companies and co-operative associations. The object of the former is to earn profits upon the capital invested, while the object of the latter is to obtain better prices for the products of their members. Joint stock companies are a town-made institution which cannot be grafted with success on the country districts. We expect to publish a fuller outline of this address in a later issue.

NEW FRUITS

"New Varieties of Fruits," was the subject of a paper read by Mr. W. T. Macoun, Dominion Horticulturist, of the Central Experimental Farm, Ottawa. Mr. Macoun contended that while most of the standard varieties of fruit grown to-day were originated a hundred years ago, this does not prove that fully as good varieties cannot be originated to-day. He told how some of the old varieties were originated and described the work that has been done in Canada to develop new varieties. We expect to publish a fuller outline of this address later.

COLD STORAGE

At the opening session Thursday morning Mr. J. A. Ruddick read a paper entitled "Refrigeration in Relation to the Fruit Growing Industry." A portion of this paper is published elsewhere in this issue, and the balance will be given later.

The balance of this session was devoted to a discussion of fruit packages, including their sizes and legal dimensions. Much interesting information was brought out during the discussions, most of which we will publish later. The discussions were concluded by referring the points raised to various committees for further consideration.

CENSUS FIGURES DISAPPOINTING

Comparative statistics of the fruit growing industry in Canada for the years 1901 and 1911, as taken from the census returns, were given by Mr. W. W. Moore, Chief of the Markets Division, at the Thursday afternoon session. The figures quoted proved disappointing. Instead of showing an increase in the number of fruit trees in Canada since 1901, an actual decrease of 315,641 trees, including over 2,000,000 in the bearing trees, was reported.

The total number of fruit trees in 1901

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Seed Growers by Appointment
to His Majesty King George V

James Carter & Co., High Holborn and Raynes Park, England

Carter's English Vegetable and Flower Seeds	Carter's Strains are of the best varieties. In sealed packets, price 10c. Wherever the English language is spoken **Carter's Tested Seeds** are recognized as standing alone.
Carter's "INVICTA" Lawn Grass	Quickly forms a close thick turf. In sealed 5 lb. and 25 lb. bags, price $1.30 and $6.25. Carter's Grass Seeds, Grass Manures and Worm Eradicating Fertilizer have established a brilliant record on the American Continent—over three hundred Golf and Country Clubs use them and are enthusiastic.
Carter's English Farm Seeds	Carter's Pedigree Mangels at 40c per lb., and Swede at 30c, are the result of years of scientific selection and root analysis; represent highest yields and feeding values.

Full details will be sent on application. If your dealer does not stock them, send us his name: in any case we welcome correspondence.

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Lime-Sulphur Solution

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Arsenate of Lead

Grasselli Lime Sulphur Solution contains the maximum amount of Lime and Sulphur **actually in solution**. It is a clear solution and free from sediment. You will not be troubled with clogged nozzles when using it. It is uniform in strength and shipped in good barrels.

Grasselli Arsenate of Lead Paste contains 15% Arsenic Oxide. It mixes as easily as is consistent with the necessary adhesive qualities.

Kills All Leaf-Eating Insects
Sticks to the Foliage

Mixes Easily with Water
Does Not Injure the Foliage

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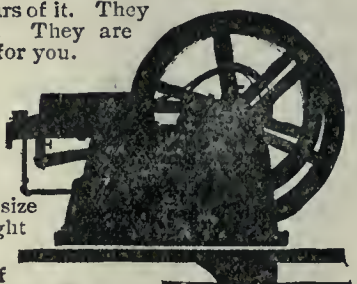
First Aid to Busy Farmers

THE farmer's champion helper is an I H C Gasoline Engine. On thousands of farms throughout the country, they are kept busy every day, running the cream separator, churn, pump, feed grinder and cutter, fanning mill, thresher, wood saw, grindstone, washing machine, dynamo for electric light plant, and many other machines. They are saving work, time, and money at every turn of the wheel.

I H C Gasoline Engines

are built for hard, steady work and years of it. They are simple, dependable, economical. They are always ready to save and make money for you.



An I H C For You

The size and style I H C engine you need depends on the work you have for it to do—and on the particular conditions which surround your locality. Any size or style will not do. You must get the right engine to get the right service.

All I H C gasoline engines are marvels of strength, reliability, and durability. They run smoothly, year in and year out. They make and save money every time they are used, and whatever style and size engine you want is in the I H C line, which includes: Vertical type—2, 3, 25, and 35-horse power; horizontal—1 to 50-horse power; semi-portable—1 to 8-horse power, portable—1 to 25-horse power; traction—12 to 45-horse power; sawing, pumping, spraying, and grinding outfits, etc. Built to operate on gas, gasoline, kerosene, distillate, or alcohol—air-cooled or water-cooled. See the I H C local dealer, or write direct today for our new catalogue.

I H C Service Bureau

The purpose of this bureau is to furnish farmers with information on better farming. If you have any worthy questions concerning soils, crops, pests, fertilizers, etc., write to the I H C Bureau and learn what our experts and others have found out concerning those subjects.

CANADIAN BRANCHES: International Harvester Company of America at Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, North Battleford, Ottawa, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton.

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what it will cost and how much money you will save on your next season's fertilizer bill if you should buy your

Nitrate of Soda

and other Farm Chemicals and mix them yourself

Your own brand MIXED AT HOME will be better than any patent brand and is sure to have in it just what you want.

Book of formulas and full instructions for Home Mixing will be sent

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if you will send your name and address on Post Card.

Dr. WILLIAM S. MYERS, Director of Chilean Propaganda
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PROVINCIAL NOTES

Nova Scotia

An evidence of the increased interest being taken in orcharding in this province was furnished at the forty-eighth annual meeting of the Nova Scotia Fruit Growers' Association held recently at Wolfville, as it was the largest and most enthusiastic meeting in the association's history. While the reports generally were encouraging and showed progress, still dismay was felt when it was announced that the brown-tail moth is spreading rapidly in spite of the efforts that have been put forth by the government to stamp it out. Our growers were warned plainly that unless they put forth an earnest effort to assist the government in fighting it, it will soon become impossible of eradication.

The danger in the situation lies in the fact that many growers treat the matter lightly and are neglectful about fighting the pest until it has got a hold in their district. The worst district is Bridgetown, where some one thousand two hundred nests have been discovered. Search parties have discovered two thousand three hundred and sixty-four nests near Bear River, Smith's Cove, Deep Brook, and Middleton. Whereas the pests formerly attacked only apple, plum and pear trees, nests were discovered last season in oak, thorn, elm, birch, beach, cherry and other trees. The moth is becoming acclimatized and spins its nest to meet the climatic requirements.

OFFICERS ELECTED

The following officers were elected:

President—S. C. Parker, Berwick. Vice-president—A. C. Starr, Port Williams. Secretary—M. K. Ells, Port Williams. Treasurer—G. W. Munro, Wolfville. Executive Board—The president, vice-president, secretary, Wm. O'Brien, Windsor Forks, Hants Co.; R. J. Messenger, Bridgetown; C. O. Allen, Kentville; S. B. Chute, Berwick.

THE EXPERIMENT STATION

Much interest was taken in the address given by Mr. W. T. Macoun, of Ottawa, Dominion Horticulturist, regarding the work to be done at the Experimental Fruit Station at Kentville. The farm consists of two hundred and forty acres, three-fifths of which will be devoted to horticulture. Experiments will be conducted to determine how best to use land while the young trees are growing, the most economical way to use fertilizers, the best methods of cultivation to obtain not only quantity but quality, color and uniformity of size, the best cover crops to use and other similar work.

A practical paper on poultry raising in connection with fruit growing was given by Mr. M. K. Ells.

A RECORD YEAR

"Transportation and Markets" was the subject of an address by W. W. Moore, Chief of the Markets Division, Ottawa, who pleased his audience when he reported that up to early in January the total exports of apples from the province to British, foreign and home markets amounted to 1,020,657 barrels. The best previous record was made in 1909 and 1910, when 711,000 barrels were exported. While the government had received complaints about some of the Nova Scotia fruit it was not the fruit that had been shipped by the cooperative associations. The importance of the German mar-

Regal New Sweet Peas

New Duplex Spencer

The best of all Pink Sweet Peas for bouquets. In color both the standard and wings are a rich cream-pink, and practically all the plants give flowers with double or triple standards.

The beautiful lemon keel, in addition to the double standard, materially enhances the effectiveness of these flowers when bunched. Of strong, vigorous growth, the vines bear the grand flowers most profusely upon long, stiff stems. **Pkt. 15c.**

New Vermilion Brilliant

The most brilliant, iridescent scarlet Spencer yet produced. The flowers are of perfect form. The bold, erect standard is well waved and fluted, of large size, beautifully rounded and finishing well below the keel. The wings are of the eame intense pure scarlet as the standard, making a uniform self-color throughout and absolutely sunproof. **Pkt. 15c.**

New Irish Belle or Dream

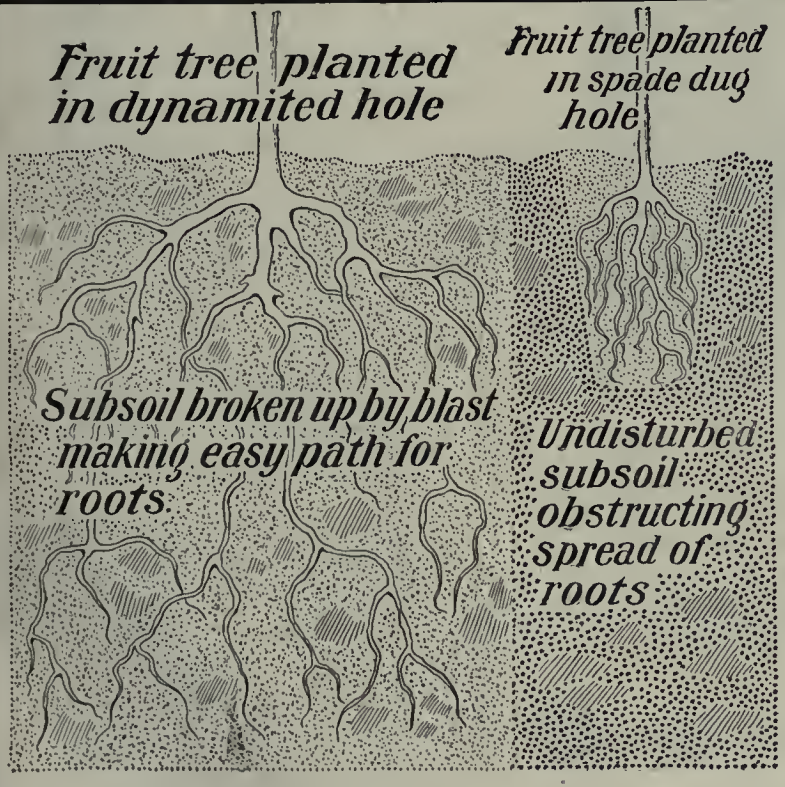
The coloring is uniform in both standard and wings, a lovely rich lilac, flushed with pink, which gives a very distinct and soft tone throughout the entire flower. Of finest Spencer type, waved in both standard and wings, the flowers are of large size and well placed on long steme. **Pkt. 15c.**

New Pearl Grey Spencer

It is certainly a most lovely and distinct shade that might be described as a pearl or dove-gray, suffused with light rose, showing a trifle more of the delicate rose shading in the standard. The flowers, borne in clusters of three and four, are of the largest size and uniformly waved in both standard and wings. **Pkt. 15c.**

FREE Write for our handsomely illustrated 112 page Catalogue of Vegetable, Farm and Flower Seeds, Bulbs, Plants, Poultry Supplies, Garden Implements, etc., now ready.

JOHN A. BRUCE & CO., Ltd., Seed Merchants, Established 1850 **HAMILTON, ONT.**



A tree planted by means of

Stumping Powders

not only thrives much better than a tree that is planted in another way, but also will produce larger crops. You can plant double the number in the same time for a much less expense.

Write us for **Free Pamphlet** on the use of

C. X. L. Stumping Powders

Used as well for removing Stumps and Boulders, Digging Wells and Ditches, Breaking Hardpan and Subsoils, Rejuvenating Orchards, etc., etc.

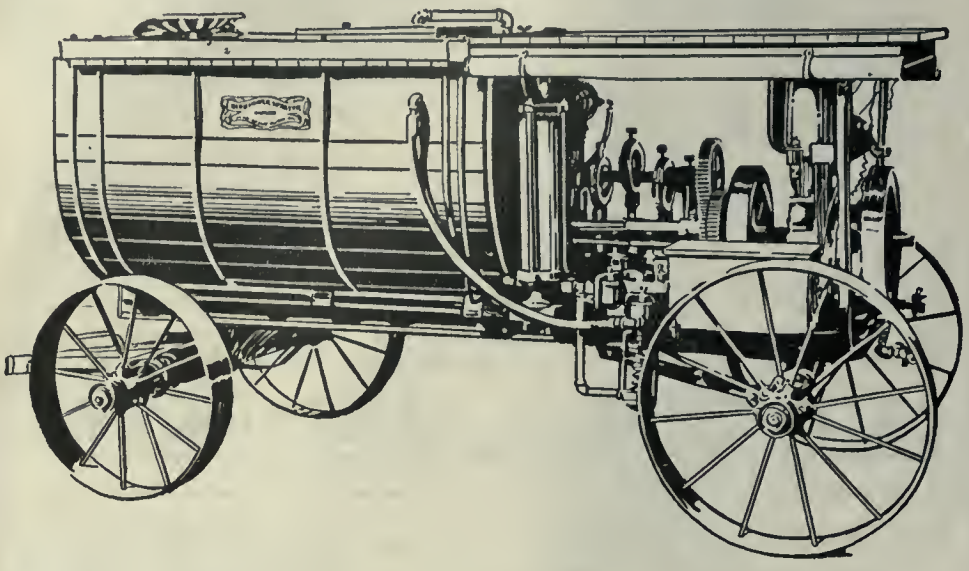
Manufactured by

CANADIAN EXPLOSIVES Limited MONTREAL Que.

BING CHERRY TREE
SET IN SPADED HOLE

BING CHERRY TREE
SET IN DYNAMITED HOLE

Power Sprayers



Giant Power Outfit

GIANT POWER OUTFIT.—This is a three-cylinder pump of great strength, power and capacity. It will spray 9 gallons per minute at 300 lbs. pressure, if desired. It can be operated with either a 2½ or 3½ H.P. Engine.

NIAGARA POWER OUTFIT.—A three-cylinder pump of slightly less capacity, but the same high pressure. Can be operated with a 2½ or 3½ H.P. Engine.

DUPLEX POWER OUTFIT.—A two-cylinder pump, medium priced, but with large capacity and high pressure. Operated with either a 1½ or 2½ H.P. Engine.

All our pumps have porcelain-lined cylinders, so are proof against corrosion. These cylinders are guaranteed for 10 years.

These pumps are very strong, very simple, and built for large capacity and high pressure.

All parts are interchangeable. Repairs cost practically nothing. Every part fits every other, and they can be immediately supplied.

All our power outfits are mounted on steel frames, which can be attached to any wagon.

They are equipped with 150 and 200-gallon tanks with rotary agitator.

Tank Filler, which works by pressure, and will fill the tank in 6 to 8 minutes.

Steel folding tower. By removing one tail nut this tower folds flat on the outfit.

The highest grade of hose. Guaranteed to stand 300 lbs. pressure during the entire season.

Spray Rods—lined with large sized aluminum tubing.

Latest approved nozzles and other accessories.

We have hundreds of power outfits working in Ontario, and wherever we have a power outfit, we have a satisfied customer.

We have great confidence in these pumps and want to demonstrate them to you.

We will pay the expenses to our factory of any fruit grower in Ontario who intends to purchase a power outfit, and who will inspect our pumps before he places his order. He will be under no obligation to purchase from us. All we ask is that he purchase a power outfit of some kind.

HAND PUMPS: MAGIC No. 9, is the largest hand pump made. One man can easily maintain a pressure of 140 lbs.

LITTLE GIANT No. 70—Most powerful barrel sprayer on the market.

THE PIPPIN No. 50 is a strong barrel pump, made for smaller orchards.

Write for our complete illustrated catalogue.

Be sure and see these pumps before placing your order.

They are made with all troubles left out.

NIAGARA BRAND SPRAY CO., Limited
Burlington, Ontario

ket was emphasized. We were told that our apples that went to the western market were not as well packed as those that went from Ontario.

Mr. P. U. Parker, of Kentville, suggested that the fruit growers of the Annapolis Valley should establish a special brand, and suggested the brands "Grown For The Taste" or "The Land of Evangeline Brand."

In a discussion of the subject, "Is Apple Growing being over done?" Mr. W. T. Macoun made light of the question, contending that it is an old one and that the danger is imaginary rather than real.

RESOLUTIONS

A resolution was carried recommending that the duty on apples coming into Canada should be increased to equal the duty on apples coming into the States. It created an animated discussion.

The Dominion government will be urged to provide for a more thorough system of inspection at the packing house, ports of shipment and elsewhere, including open packages when and where advisable, and to issue certificates of inspection when circumstances and conditions warrant such action.

The government will be urged also to add to the duties of the fruit inspectors the inspection of the barrels in which the fruit is packed, and to so amend the act as require all coopers who manufacture barrels in which apples are packed to brand their name and address on the side of each barrel.

It is proposed to hold the district horticultural exhibition hereafter in Halifax, where it is believed that it will be more largely attended and thus compare more favorably with the exhibitions held in Toronto, Vancouver and elsewhere.

A resolution was passed at the instance of the W. C. T. U., expressing the view that the growing of tobacco on the experimental farm at Kentville would be detrimental to the youth of Nova Scotia.

A motion was adopted requesting the government to define the size of number one and number two apples.

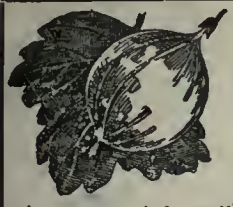
Niagara District Notes

There is a possibility that a pre-cooling station may be established this season in the Niagara district and an effort is being made to have it located at Hamilton. At the recent Dominion Fruit Conference at Ottawa Cold Storage Commissioner J. A. Ruddick reported that the government had amended the cold storage act in a manner that would permit of the government defraying part of the expense of the erection of such a building, providing it is built and operated on lines approved by the government. He stated that negotiations were still in progress between the promoters and the government.

A company capitalized at $150,000 is arranging for the erection this season of a new canning factory at Hamilton.

A banquet will be tendered Hon. Martin Burrell, the new Dominion Minister of Agriculture, at the Welland House, St. Catharines, by the members of the Niagara Peninsula Fruit Growers' Association in connection with their spring meetigs which will be held on March fourth, fifth and sixth.

Our fruit growers are interested in the discussion by members of the Toronto City Council of the proposal to erect a fruit market. A special committee of the council has been dealing with the matter, and Property Commissioner Harris has been requested to select a suitable site.



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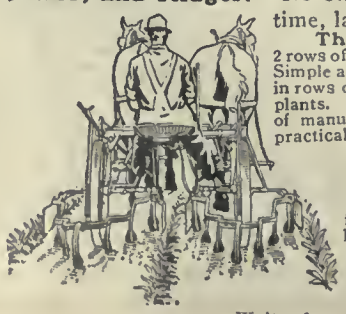

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It is understood that a new canning factory will be erected this season by the Dominion Canners, Limited, at Jordan Station.

While the unusually severe weather this winter is believed to have done some damage to fruit buds, still it is not believed to have been serious. In the St. Catharines district no damage is reported. Reports from Norfolk county show that some damage has been done there.

British Columbia

The trial shipment of apples from Summerland, shipped to the firm of Messrs Garcia, Jacobs and Co., London, has been reported on very much to the satisfaction of the shipper, Mr. C. J. Thomson. So delighted were the brokers that they immediately stated that they could handle ten thousand boxes of such apples each day of the fruit season and could do this without spending a penny in advertising, depending wholly on the apples themselves to win their way in the London market. Messrs Garcia, Jacobs and Co. report that they would rather handle British Columbia fruit than any other apples, and that we can easily capture that market. In packing our apples for that particular market this firm states that better results would be obtained by lining the boxes with corrugated paper and placing cardboard between each layer of apples.

Notwithstanding the fact that the Christmas trade had been supplied before the arrival of this shipment, the prices realized were very satisfactory. Had the shipment arrived three weeks earlier even better prices would have been paid. The following is a list of the varieties shipped and the prices realized by each: Spitzenberg, 14s to 14s 6d; Newtown Pippin, 14s to 14s 6d; Winter Banana, 15s; Wagener, 10s to 14s; Northern Spy, 9s to 9s 6d. These prices show the varieties most desired.

One of the first cherry fairs ever held in Canada is to be conducted at Kaslo the latter part of next July. The competition will be open to all fruit districts, and it is expected that thousands of boxes and bottles of cherries will be shown. It will be held under the auspices of the Kaslo Fruit Growers' Association.

Our British Columbia fruit growers expect to meet with even keener competition in the prairie markets during the coming season than hitherto as the result of the formation of an exchange for the handling and marketing of the fruit of all the affiliated associations of the Pacific North-West States, including the Hood River, Rogue River and Yakama sections, the exchange being based on the California plan. It is expected that this exchange will handle something over eight thousand cars of fruit during the season, or more than half of the crop of the Pacific north-west. In due time a similar exchange will have to be formed in British Columbia.

Mr. Mitchell's Spy Tree

So many readers of THE CANADIAN HORTICULTURIST have asked Mr. George Mitchell of Clarksburg for further information about the twelve-year-old spy tree of his that was illustrated in the January number of THE CANADIAN HORTICULTURIST and which last fall produced five barrels and one bushel of apples, ninety to ninety-five per cent. of which were number one and all highly colored, Mr. Mitchell has written us giving further information about it. Mr. Mitchell writes as follows:

The Canadian Horticulturist

Vol. XXXV APRIL, 1912 No. 4

Small Fruits in the Orchard

T. G. Bunting, B.S.A., Experimental Farm, Ottawa

THE growing of small fruits in the orchard is a question much discussed by fruit growers who desire to get a return from their land occupied by an orchard, before that orchard will return a dividend to them. In the case of a peach orchard it is at least the third year, in most cases the fourth year, and in some the fifth year, before a return is given above the outlay for that year. In the apple orchard it is proportionately longer. The age at which any fruit tree comes into profitable bearing depends first on the years it requires to bring it into bearing, which varies considerably among the different classes of fruit, and also among the varieties, and second on the care and treatment which has been given to the trees. We find that a period of from three to eight, and in some cases more years, may elapse before we can expect to get a profit from the orchard. It, therefore, becomes desirous to many fruit growers to endeavor to get a return from this land set to orchard during the interval required by the orchard to come into profitable bearing. This return may be secured by planting small fruits or some other crop between the tree rows.

Let me here say that it is the practice among some of the best orchardists of this country, but more particularly of the country to the south of us, to leave the land planted to fruit trees entirely devoted to the trees so planted. The reasons for this are these: that when the orchard is not inter-planted with small fruits or other crops the orchard may be given the very best care and treatment, which usually is not, and cannot readily be given in an orchard inter-planted. The orchard, by the better care and treatment thus given, can be brought into bearing earlier, and will be a more profitable orchard in every way. Thus the greater returns from the orchard in the end will, in most cases, more than offset the returns that might have been obtained by the intercropping. No matter what is planted as an intercrop, it will take from the land much of its fertility and will not leave it in as good a condition as it might otherwise be in. On the other hand, some men will give better care to an orchard so inter-planted, as the second crop will require the attention that might not otherwise be given if there was not some revenue coming in from the land.

DO NOT CROWD THE TREES

In interplanting an orchard great care should be taken not to crowd the growing trees. It should be remembered that the trees at the close of the season will be much larger than they were at the beginning, and what may seem sufficient room for them early in the spring, before growth begins, may leave them later in the summer badly crowded and interfering with the other crop. The first year at least four feet on all sides of the trees should be left clear and, where small fruits are planted a greater distance should be left; for strawberries five feet, raspberries and bush fruits, six to eight feet or more.

Blossoms off, Calyces Open, Ready to Spray

When spraying to prevent the ravages of the codling moth, the object should be to deposit poison inside the calyx, which, as the apple grows, closes and forms the "blossom" of the mature apple. This poison catches the codling worm as it starts to eat its way into the apple. It is important to make the spray application at the stage of the blossom as here shown, otherwise the application will be useless in combatting the codling moth.

Of the small fruits which are very often planted in the orchard, the strawberry is one of the best to plant, because they seldom occupy the land for more than three years and usually for only two years; and after that, unless the trees are slow growing or very far apart it is well to leave the land to the trees. In planting strawberries, if the tree rows are from eighteen to twenty feet apart, three rows of strawberries can be planted between the tree rows, leaving the rows of strawberries four feet apart and five to six feet from the tree row. Some growers will crowd in four rows when the trees are the above distance apart, and then very often the trees will suffer, especially the second year, from giving the berries the proper cultivation and in harvesting the crop, so that the fourth row would be much better if left out. If the strawberry plantation is left for a second crop in the third year, it will require quite a lot of cultivation late in the season of the second year, and during this time there should be very little cultivation given close to the trees as it may cause the trees to continue to grow late in the season.

OTHER SMALL FRUITS

Where currants or gooseberries are grown, two rows are sufficient to plant between the tree rows, when the tree rows are from eighteen to twenty feet apart, as these bush fruits will occupy the land for a considerable time, and do not give much return before the third season. Thus, if a third or fourth row is planted, by the time they are in bearing, the trees will be encroaching on them, and both will suffer. Some bushes can be planted in the tree rows but here as elsewhere the trees should be the first consideration.

Where raspberries or blackberries are grown, only one row can be recommended to be planted where the trees are the former distance, eighteen to twenty feet apart. Many growers will plant more, and crowd the trees, when interplanting, but if they will consider what the orchard and bush fruits will be like in a few years in the future they would allow plenty of room for their trees, as they are to be the main crop and give the chief reward for the money and effort expended.

Another thing too often neglected is the removal of the bush fruits as soon as the space is required by the trees. It is a mistake to leave the bush fruits in the

An Out-of-Date Method of Pruning, Well Demonstrated

Nowadays progressive orchardists aim to have their trees low-headed, in which case much labor is saved in pruning, spraying and in harvesting the fruit, and there is not the same loss from windfalls as with the old time high-headed, high-trimmed trees. Except for the method of pruning being followed this young orchard shows that it is receiving good care.

orchard after the trees require the land. I have seen orchards where the limbs have been meeting in the centre and underneath the branches in the shade were to be found raspberries growing for the purpose of producing a crop, and a revenue. The raspberries prevented an economical and proper management of the orchard, consequently the orchard suffered, and besides the raspberries could not possibly be returning much of a crop from the manner and circumstances in which they were growing.

In the orchard that is intercropped there is a double demand on the fertility of the soil. Provision must be made for this in the way of fertilizers, of which barnyard manure is the most satisfactory. Cover crops can not be readily resorted to where small fruits are grown; consequently it is more difficult, and in fact almost impossible, to keep the land in the best physical condition. After the small fruits have been removed from the orchard, it is very desirable to grow, as soon as possible, some cover crop, clovers and vetches being among the best, in order that it may be incorporated in the soil. Of course if the land has been well fertilized with barnyard manure, it may not need the cover crop.

CULTIVATION

Early and frequent cultivation is necessary, chiefly to conserve the soil moisture. If frequent cultivation is not given early in the season and there should be a scarcity of rainfall, as there usually is at the time when it is most needed, the small fruits will suffer considerably at fruiting time and the trees cannot be expected to do their best. Cultivation should begin before the first of May, and usually as early as possible. There is no fear of giving the orchard and small fruits too much cultivation during May and June, as this is the time when the orchard is making the greater part of its growth.

In summing up, would say that if it is thought desirable to interplant in the orchard with a view of making the land profitable while the trees are coming into bearing, small fruits can be grown with satisfaction, and in some cases they may induce the fruit grower to take better care of his orchard. The fruit grower should never lose sight of the fact that his orchard is the chief consideration and that the small fruit is only of secondary importance.

Spring Cultivation

Grant S. Peart, Burlington, Ont.

The scientist tells us that plant food in the soil must be in solution before it can be utilized by the plant. It is necessary, therefore, that the soils of our orchards shall be kept in a moist condition during the growing season if we expect to get sufficient wood growth and good-sized fruit. In many parts of Ontario the growers have to contend with a month or more of drought during the growing season, and at this time they cannot afford to let the fruit and trees stop growing. The value of conservation of moisture, to offset the dry weather, thus becomes important. The fact that thorough cultivation tends to conserve soil moisture constitutes one of the first principles in horticultural work. Many of our Ontario growers do cultivate their orchards, but some commence this operation too late in the season to produce any beneficial effects. It is not uncommon to observe orchards with heavy clay soils being worked during July, for the first time that season. These orchards are generally dried out before they are plowed, so that the ground turns up very lumpy and rough. When in this condition it is with great difficulty that the lumps can be reduced sufficiently to obtain the desired mellow mulch.

A light dressing of nitrate in the spring has been found of assistance to fruit trees at the time of setting the fruit.

A Well Kept old Orchard That was Neglected When Young

Notice that several of the trees have been allowed to develop from sprouts or suckers and that no care has been taken whatever to direct the growth or shape.

A Lesson in Pruning.—An Old Apple Tree That Still Has Too Much Wood

Care of the Peach Orchard*

F. M. Clement, Dutton, Ont.

THREE things I would insist on from the first are the following: That the tree has life. Its growth and development then depends on the attention and care you give it. Second, be sure that food is taken in a soluble form, which means that the grower must prepare the food for the tree; and lastly, remember that the cheapest way of supplying fertilizer is by careful cultivation.

The meaning of the word manure is the same as to manœuvre or to work by hand. The Greeks realized that if they cultivated the land very carefully the crop was increased. In other words, careful cultivation makes available the plant food or makes it soluble so that it can be used by the tree. The importance of thorough cultivation during the early spring weeks cannot be too strongly emphasized; at this time the tree is carrying its load of fruit, producing new wood and forming in embryo the tiny fruit and leaf buds for the next season's crop. That is the critical time in the life of the tree. A single cultivation in June is worth two or three in July.

CHECKING GROWTH

It is just as important to check growth in early August as it is to produce it in May and June. Many trees throughout Ontario were severely injured last winter because of late cultivation or stirring the soil when digging the potatoes or roots from between the rows. This started new growth, which was not sufficiently hardy to stand the winter. A young orchard at Sparta was severely injured last winter because of this. The grower is one of the best, if not the best, in the county, but because he cultivated a little too late about one-sixth of his trees were injured or killed, and I understand that Mr. Johnson, of Forest, had a large number of trees injured because of cultivating or stirring the soil a little late in the season. If the trees are not too heavily laden, sow cover crop in early July. This will tend to check the growth and to ripen the wood and buds.

FERTILIZING

Our best men also differ in their methods of fertilizing their orchards. Here again we have the two extremes of little or no fertilizer, to a large amount of fertilizer applied each year. One prominent grower whom I know does not use any farmyard manure. He depends on thorough cultivation. He claims that humus or a good cover crop such as clover plowed under and carefully cultivated will give all that the trees on a loam or sand loam require, and his results seem to bear out his theory, as he has produced good crops for six or seven years without using farmyard manure or commercial fertilizer. Another grower whom I know, uses a limited amount of farmyard manure each year, and in the early summer applies along with it about seventy-five pounds of potash and two hundred pounds of bonemeal per acre. He also is getting excellent results, and I understand that he has not missed a crop in the last four or five years.

What appears to me to be the ideal method is to cultivate thoroughly up to the first or middle of July and then sow a crop of clover, vetch or rye or a mixture of them to be plowed under early in the following spring or when the rye is about eighteen inches high. Commercial fertilizer of bonemeal and potash, about two to one, applied at the rate of about two hundred and fifty pounds to the acre, along with this should return to the soil all and more than the crops are removing from year to year.

THINNING

As yet very few growers have the courage to thin the fruit. They cannot bear to see large quantities of fruit pulled off and thrown on to the ground and consequently as yet few of the growers are thinning systematically. A large number practice it a little, but it cannot be said that it is a regular feature of orchard practice. To my mind it is just as important as cultivation and manuring because we lose the value of our early labor by not continuing the good work a little farther and removing some of the fruit that is tending to break down the tree.

In a thinning experiment conducted in the orchard of Mr. Haynes, of St. Cath-

The Same Tree After Pruning Had Been Completed

(Both Photos by F. Brooks, Barrie, Ont.)

*Extract from a paper read at the last annual convention of the Ontario Fruit Growers' Association.

An Up-to-Date Power Sprayer Well Adapted for Use in Old Orchards

mines, last summer the trees thinned from three to five inches produced five hundred and fifty pounds of fruit, while those that were unthinned produced five hundred and fifty-five pounds, but in the latter case there were six thousand peaches and in the former only a little over three thousand; or in other words, the peaches from the trees that had been thinned were almost twice the size of the others. From the trees that were thinned from five to seven inches, we obtained four hundred and forty-six pounds of fruit, but they were all exceptionally large and of excellent quality.

No safe distance to thin can be recommended, but in no case should two peaches be allowed to touch each other unless they are on opposite sides of a fairly large twig. They color and mature much better if they do not touch each other. When thinning fruit a man must use his own judgment. If he is in doubt whether the fruit should be taken off or not, he should take it off, because in nearly every case when the trees appear with only half a crop in the early season, later, when the fruit is large and more developed, the trees have all that they can bear.

What Tests of Commercial Fertilizers Have Shown

Professor R. Harcourt, O.A.C., Guelph, Ont.

(Continued from March issue)

IT may be stated in a general way, that nitrogen forces leaf and stem growth and tends to delay the ripening process. Phosphoric acid aids in the formation and transportation within the plant of the protein and hastens maturity, while potash appears to be essential to the formation and transportation of starches, sugars, and so forth. With many of the crops of the market gardener, especially those sold in the immature state, quality is dependent upon, or measured by, both appearance and palatability: Palatability is determined by the succulence and sweetness of the vegetable, or by its freedom from bitterness, stringiness and other undesirable characteristics which frequently exist. These can be largely eliminated by providing an abundance of food for a continuous and rapid development of the plant. Any delay in the growth of a radish or of lettuce is largely responsible for the sharp taste and pungent flavor of the former, and the bitterness and toughened fibre of the latter. For crops of this nature a generous supply of potash and phosphoric acid is essential, but nitrogen is the constituent which should predominate.

WHEN TO USE NITROGEN

When plants must be allowed to mature, as with the tomato, corn, potato, sugar beets, and so forth, a soluble form of nitrogen, as nitrate of soda, may be used early in the season to insure a good start, but it should be withheld during the latter stages of growth in order that the mineral constituents may have a chance to bring on maturity.

Big fleshy leaved plants, such as cabbage, cauliflower, and tobacco, require large quantities of potash. This is also true of such crops as potatoes, mangels, parsnips, and so forth, which store starch or some other form of carbohydrate in the tubers or roots of the plants.

Just as plants differ in their food requirements they also differ in their ability to gather their food. This appears to be due, not only to the time of the year they make most of their growth, the length of the growing period and the depth and range of the roots; but, also, to differences in the ability of various plants to attack certain soil constituents. Consequently, a man must study his soil and crops to become familiar with the peculiarities of each and seek to provide in the form of commercial fertilizers that which the particular plant he is dealing with stands in most need. It is because this has not been done that so many people have failed to obtain results from the application of fertilizers.

EXPERIMENT FIRST

To become familiar with the needs of the soil, the requirements of the crops, and, at the same time, learn something about the influence of the various constituents of plant food on the crops he wishes to grow, it is advisable for the beginner to do some experimenting before he invests heavily in expensive fertilizers. Such an experiment may be made on the vegetables with comparatively small plots, say one-twentieth of an acre, or even smaller, but, where space will allow of it, larger plots are better. The arrangement may be as follows:

Plot I.
Check.

Plot II.
Nitrate of soda.....at rate of 200 lbs. per acre
Superphosphate .. ....at rate of 500 lbs. per acre
Muriate of potash ....at rate of 200 lbs. per acre

Plot III.
Nitrate of soda .....at rate of 200 lbs. per acre
Superphosphate .. ....at rate of 500 lbs. per acre

Plot IV.
Nitrate of soda .....at rate of 200 lbs. per acre
Muriate of potash ....at rate of 200 lbs. per acre

Plot V.
Superphosphate .. ....at rate of 500 lbs. per acre
Muriate of potash ....at rate of 200 lbs. per acre

Such an experiment shows the effect of the addition of the three main fertilizing constituents, nitrogen, phosphoric acid, and potash, against no fertilizer on the check plot, and as on each of the succeeding plots one of the constituents is omitted, a chance to note the effect each ingredient has on the crop. Naturally, the experiment must be placed on soil that is uniform and all the plots must receive the same cultivation. The experiment may be made even more simple by applying the mixture suggested for Plot II. above to one plot and nothing on another. However, such an experiment gives no idea as to whether the soil is deficient in any one constituent. This experiment is one that is always to be used where the complete mixed fertilizers are used, for it is the only way that one can demonstrate whether the fertilizer is really doing any good.

With reference to the use of fertilizers with fruit crops, we in this country have very little absolute data to quote from.

German investigations show that vegetables make better use of the constituents of farmyard manure than fruit crops. Experiments carried out at the Diemitz Experiment Station, and at Strassfurt in Germany, seem to clearly indicate that in the case of fruits, and especially with apples, fertilizers containing nitrogen, potash and phosphoric acid can be used with profit, and that potash affects the results more than any other one constituent. On the other hand, stone fruits were more influenced by phosphoric acid and nitrogen.

Recently considerable prominence has been given to the fact that apples may be successfully grown without the use of any manure. Some form of cover crop is essential to the proper cultivation of orchards, and obviously it is to the advantage of the owner to grow a crop that will gather nitrogen from the practically limitless supply in the atmosphere. It is possible that under many soil conditions enough of this expensive element may be gathered in this way. And, further, as the roots of the apple tree extend deeply and over a wide area and the tree has nearly the full season to mature its fruit, it may be able to gather all the food required. However, soil conditions vary so widely that it is impossible to draw definite conclusions from one experiment. Many fruit growers will bear out the statement that manures have increased their crop. Last year we placed a number of fertilizer experiments on apple and peach orchards, which we hope to continue for some years in order that we may procure reliable results.

In 1908 the writer visited a German Provincial Fruit Experiment Station at Diemitz, near Halle, Germany, where an apple orchard had been under experiment for sixteen years. The orchard received a small amount of stable manure and good cultivation. The illustrations in the March number, pages 59 and 60, indicate fairly well the marked effect of the fertilizers.

Many of the small fruits respond readily to an increased supply of plant food applied in the form of fertilizers and they are comparatively easily experimented with.

In closing let me urge those who are inclined to use fertilizers to experiment in a small way before applying these materials freely. Further, do not expect them to take the place of cultivation; nothing can do that, for it is only when the good cultivation is given that the soil is in a condition to allow the plant to make the best use of the plant food available.

The ideal location for geraniums is a light sunny house with a temperature of forty-five to fifty degrees at night.

Spring Planting

Wm. Hunt, O.A.C., Guelph, Ont.

The months of April and May and the early part of June are busy times in the flower garden. The pruning, trimming, and the clearing up of all garden rubbish should be all finished and the ground dug and prepared for planting operations by the middle of April, if at all possible.

The earlier rose bushes, shrubs, and trees are planted now the better. Most of the hardier kinds are best planted as early in April as possible. Where the plants have been lifted earlier, and heeled in temporarily, it is not too late to plant them during May. Always try and plant just before a showery time if possible. Never plant trees in heavy soil when the ground is very muddy and sticky. It is better to wait a day or two for the soil to dry a little. In sandy or very light, well drained loamy soil, this matter is not of so much importance.

PREPARATIONS FOR PLANTING

Dig the ground well first. If barnyard manure is dug in now it should be well rotted. A spading or digging fork is the best implement for digging the ground whether in the spring or fall. The ground is easier worked and pulverized than with a spade, unless the ground is of a very sandy nature. If manure is dug into the ground now, dig it in so that it does not come into direct contact with the roots of the tree or plant. After digging, the surface of the ground should be roughly graded so as to get it of the proper contour or shape, whether quite level or rounding on the surface. Raking the surface very fine is not necessary or desirable when planting trees, shrubs, or bushes.

When the ground is properly prepared put a stake where each plant is to be set. In placing the stakes make sure that you are giving each plant the amount of room it will require when it reaches maturity. Try and picture to yourself what the plant or plants will look like when they have reached maturity, then set the stakes accordingly. For roses and shrubs, the extreme height the plant will grow to is a fairly good guide for the distance apart they are to be set. Take, for instance, the average height of a well cared for rose bush as being from two to three feet: About three feet is the proper distance apart to set these. Climbing roses will grow sometimes fifteen or twenty feet in length from the roots. Ten to fifteen feet apart is a very good distance for these, as they can be pruned in oftentimes to suit the space they are to occupy. Give the bush type of rose an open, sunny position. In planting climbing roses, do not plant them close to a building or fence, especially on the south side. This is the position often selected for climbing roses and tender climbers generally, but it is a huge mistake. One has only to stop and think of the conditions that exist during the winter and early spring on a building or fence facing directly south. In the day time, on sunny days, the thermometer will register away up into the eighties on the wall of a building. At night possibly the temperature will fall to ten or twelve degrees above zero, thus roasting the plant in the day time and freezing it at night. The conditions mentioned are the most trying out of door conditions it is possible to give plants. There is also another objection to a direct southerly

Early Tulip Bed in Major Hill Park, Ottawa

Tulips with a Background of Ferns

These tulips, in the garden of Mr. F. H. Whitton, of Hamilton, were imported from Holland. With their background of ferns they present a most pleasing appearance. They are planted with a northern exposure.

aspect for climbing roses. The intense heat in summer not only bleaches and spoils the roses quickly, but the concentrated heat induces the attacks of all kinds of insect pests that are so common to climbing roses and many other climbers in summer. An east or north-east aspect, or even a direct northerly aspect is better than a direct south aspect for climbing roses. Avoid planting too close up to a fence or building in any case. The growth of the plant should be at least a few inches from the building or fence to allow of a free circulation of air, and to permit of spraying being done, so that all parts of the foliage can be reached whether sprayed with insecticides or with water.

It is best to plant what are to be the permanent occupants of the ground first. Then fill in the spaces with more temporary or inexpensive plants that can be cut or rooted out afterward, as the more permanent plants fill in the spaces. This is a far better plan than planting too thickly at first with expensive plants, that have to be thinned out when they are just beginning to improve and beautify their surroundings.

HOW TO PLANT

See that the roots of the plant are in the proper condition for planting. Any broken or badly bruised roots should be cut off at the point of injury. Any unduly long thick roots, or the tap root, should be shortened a little, probably one-third of their length. All the small fibry roots possible should be left on the plant untouched. These last-named are the life-giving roots of the plant. Unless the top growth is very dense or overgrown, it will be best taken off after the bush is planted.

Dig the hole the plant is to be set in deep and large enough to give the roots plenty of space. Loosen the soil well below where the roots are to go before planting. Set the bush in position, making sure that it is upright and set in the proper depth. As a rule the plant should be set an inch or two deeper than when growing in the nursery grounds. The surface mark of the soil can usually be seen on most plants. Avoid planting too deeply. The roots, however, must be deep enough to ensure the stability of the plant.

When the plant is set properly in place commence filling in with the finest soil procurable around the roots of the plant. I have found a sprinkling of fine sand splendid material for inducing root action. There is no better material than sand or sandy soil for inducing root action in any plant or bulb. Never put fertilizers of any kind in direct contact with the roots of newly set plants. Fill in the soil after starting evenly and pack it firmly so as to leave no air spaces around the roots. The soil should be tramped or pounded very firmly for rose bushes. About an inch of loose soil should be left on the surface to retain and conserve the moisture. When filling in the soil the bush can be pulled up slightly if found to be set too deep.

Unless the weather is very dry in spring, dormant bushes seldom require water at the roots. Care should be taken not to give newly set trees too much water at the roots. A soddened condition of the soil is often very detrimental to newly planted bushes and trees.

TOP PRUNING

After the bush or shrub is set the top should be pruned. In the case of rose bushes fully one-third of the length of the top growth should be removed. Oftentimes nearly two-thirds of the length of each large cane or shoot would be better taken off. It is a mistake to leave too much of the top growth on with the idea of getting a big rose bush quickly. Too often it means a dead rose bush quickly, or at least a very weak sickly looking specimen for some time. About six or eight inches of the base of the last season's growth in length is usually ample young growth to leave on a newly planted rose bush. All the very small weakly shoots should be removed to their base.

The young canes of climbing roses should not be so severely pruned. These can, however, be pruned back fully one-half of their length. The very small weakly shoots should also be removed.

In pruning the tops of newly set bushes or shrubs it should be remembered that the roots of the plants have already probably undergone severe pruning, and it is absolutely necessary for the wellbeing of the bush that a corresponding quantity of the top must be removed to balance and equalize somewhat the conditions. Better an excess of roots in proportion to the top than an excess of top growth out of all proportion to the root system. An excess of roots will produce plenty of good healthy top growth in quick order, but an excess of top growth means a weak, sickly, or perhaps a dead specimen before the season is over.

ROSE VARIETIES

The following are twelve good hardy hybrid perpetual roses: Frau Karl Druschki, white; Clio, white-tinged pink; General Jacqueminot, scarlet crimson; Prince Camille de Rohan, crimson maroon; Jubilee, very dark crimson; Dupuy Jamain, bright cerise red; Jules Margottin, cherry red; Magna Charta, rose red; Ulrich Brunner, cherry red; Anna de Deisbach, silver pink; Mrs. John Laing, bright pink; John Hopper, pink, reverse of petals silvery.

Four good moss roses (bush) are: Blanche Morean, white; Comtesse de Murianais, white; Crested Moss, rosy pink; Laneii, rosy crimson.

Four nice climbing roses are: Dorothy Perkins, silvery pink; Crimson Rambler, reddish crimson; Lady Gay, pink; Queen Alexandra, pink.

Some good Rugosa or Japanese roses include: Blance Double de Coubert, double white; Conrad F. Meyer, pink; Sir Thos. Lipton, white; Rubra, deep rose red.

The Rugosa roses make a good lawn hedge, or are suitable for planting in shubberies.

Polyanth and small flowering roses include: Clotilde Soupert, white shaded pink; Baby Rambler, reddish crimson; Yellow Soupert, yellow; Hermosa, a Bourbon rose, very hardy and free flowering.

The main rules to observe in planting all kinds of bushes or trees are very much the same. One very important point is to never allow the roots of any plant to lie exposed to the sun and air any longer than is absolutely necessary.

Canadian Gardens—An Amateur's Garden Worth While

R. S. Rose, Peterborough, Ont.

ARTICLE No. 4.

FLOWER growing is not so difficult as some people seem to think though to have flowers grow and give forth their best bloom, you must watch over them, work hard amongst them, nurse, and last but not least, love them. If you do these you will be amply rewarded by an abundance of bloom during the months from May to the end of November.

In our garden we try to have constant bloom so that when one variety dies

The Backyard before the Garden was Started

down another is ready to take its place. In this we have succeeded beyond our expectation. As, however, our garden has only been in existence for six years, it is only now commencing to show what it really can do. It is a city lot, forty-five by two hundred and twenty-five feet, and is laid out according to the following plan:

One.—Lilacs, common.

Two.—Shubbery, consisting of Persian lilacs, purple and white; Tartarian honeysuckle, white and pink; Indian currant, spiræ van Houttei; syringa, mock orange, weigelia rosea, snowball and meadow sweet. This shrubbery is about thirty feet long by three and a half feet wide. We do not attempt to grow any annuals around the shrubs as we want them to have lots of room to spread themselves. They bloom from early spring to midsummer.

Three, is our long perennial flower bed. It is about one hundred and fifty feet long by four and a half feet wide. At the back it is lined with phlox, including such kinds as Bacchante, Bridesmaid, Henry Munger, Jules Cambon, Selvia, Von Hochberg, Couquelicot, Richard Wallace, Mercier, Paul Kruger, Pantheon, Elizabeth Campbell, Edmund Rosland, Mr. Jenkins, and others. In all there are thirty-six different varieties blooming in a mass of different colors, from the middle of June until frost.

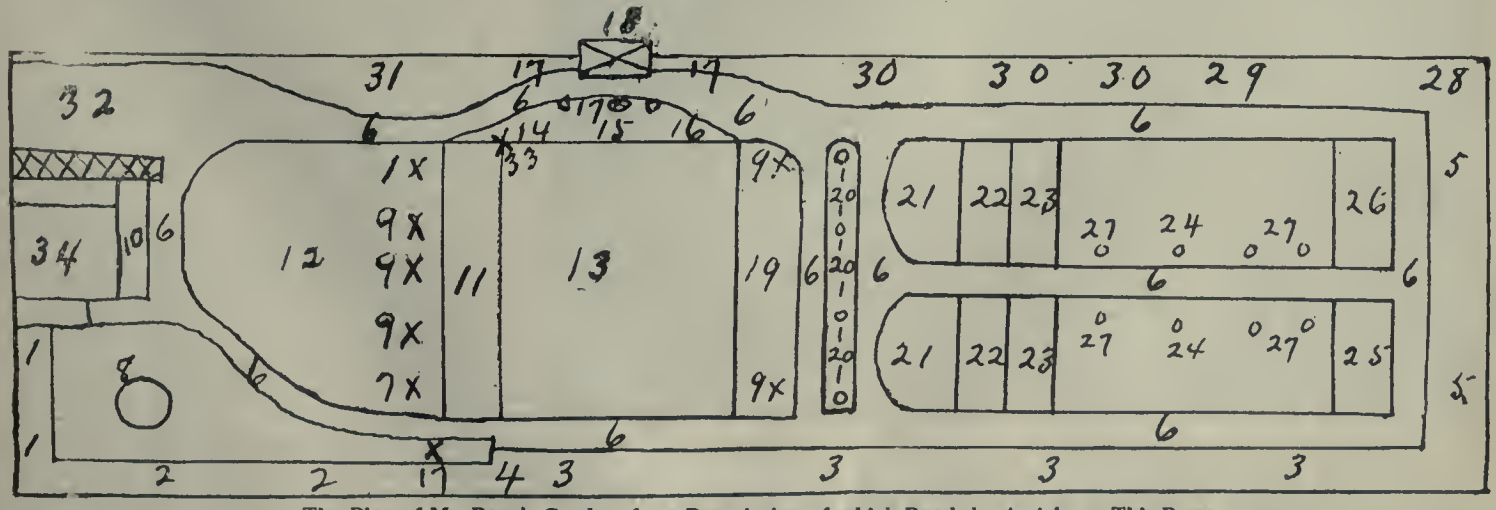
With these are the Scarlet Likners, perennial sunflower (Golden Wave), Valeriana, or the hardy garden heliotrope, soronicum, (this should have a place in all gardens), and three varieties of Delphinium. The last bloom before the phlox and continue to bloom with them.

In front of these we sow our annuals, namely, Coreopsis, Calendula, annual snap dragon, Centaurea or Bachelor's Button, Gypsophila, Love in a Mist, Marvel of Peru (four o'clocks), annual wall flowers, mallows, white and pink; if we have a bare spot, we transplant from our perennial seed bed, where we always have some plants coming on. We act on the principle that there is always room for one more. We keep our beds as full as possible, so that the earth is not seen, as we find that this retains the moisture best. In this bed I should say that we can always find room for zinnias, stocks, scabiosa, gaillardia and sweet sultan. All the annuals are mixed colors. The whole length of the bed is bordered with sweet alyssum (little gem). When this bed is at its best it fairly dazzles the eye in coloring, being so brilliant, and our great aim is to have its colors blend, so that one will not kill the other.

The Long Bed Showing Some of the Phlox

Four is a clump of Assyrian poppy, a perennial. This poppy is very large and extremely hardy. In color it is a deep blood red. The root was sent us by a friend straight from Assyria about eight years ago.

Number five, is a high bank with stone facing in front. This bank is lined with



The Plan of Mr. Rose's Garden, for a Description of which Read the Article on This Page.

mixed hollyhocks, golden glow and golden treasure. In front of these are Canterbury bells, mixed colors, then coreopsis lanceolate, Snow in Summer, Dianthus Plumaris, annual larkspur, sweet rocket, pentstemon, platycodon pyrethum, veronica, Iceland poppies in clumps here and there in both beds, and any annual or perennial we may have to fill in. The whole bed is bordered with mixed dwarf nasturtiums. This bed is forty-five feet long by six feet wide.

Six.—Paths.

Seven.—Large Giant Syringa.

Eight.—Rockery.

Nine.—Paeonies.

Ten.—Geranium bed, bordered by forget-me-nots, shasta and the blue daisy (agathea.)

Eleven.—Lily bed, bordered by narcissus Poeticus, back of these are day lilies, both white and blue; orange, tiger and sweet scented yellow lilies, Spanish, German, Japan and English iris, and the common blue flag. The whole bed is simply carpeted with violets, white, wine, and deep blue English, the common yellow and the deep blue double Russian, not to forget the California violet, of which there are a few clumps. This bed throws out a most delightful perfume in the early spring. The bed is siuated at the foot of a raised lawn.

Twelve.—Clothes lawn raised so as to form protection to the lily bed.

Thirteen.—Sunken lawn.

Fourteen.—Wild flower garden, and the leavings of all seeds that are left over.

Fifteen.—Well shaded by trees that the sun filters through, makes a splendid pansy bed. It is just one mat of pansies, as all kinds from the Giant to the Viola or tufted pansy, bloom here. The coloring is simply gorgeous, ranging from white to a deep purple. In fact it has all colors that pansies are noted for. Both sides of the bed are bordered by a deep band of lilies of the valley, and at the back by narcissus.

Sixteen.—Perennial seed bed.

Seventeen.—Rowan and elm trees.

Eighteen.—Well with pump. Beds fourteen, fifteen and sixteen are all bordered at the back by columbines of different varieties.

Nineteen.—Rose bed. We have a variety of roses, most of them being the hardy hybrid perpetuals, such as Anna De Diesback, Baron de Bonstettin, Frou Karl Druschki, General Jacqueminot, Mrs. John Lang, Paul Neyron, Prince Camille de Rohan, Margaret Dickson, Soliel D'or, Harrison's Yellow, Madam Plantier, and others which bloom from June till late in the fall. We have had bloom in November. Through the bed are large clumps of English and Russian Violets, alternating with clumps of pansies. This bed is thirty by ten feet.

Twenty.—Back of our rose bed runs our sweet pea trellis, thirty feet long, and eight feet in height, made of wire mesh. Sweet peas are sown on both sides and bordered by dwarf nasturtiums or any good plant that would shade the stocks from the sun, and also keep in the moisture, which we find necessary. We have had them grow so tall that we have had to use a step ladder to cut the top blossoms. Keep them cleaned, do not let them go to seed, and you will have a much finer bloom.

Twenty-one.—On each side of the path behind the sweet pea hedge, we have what we call our pick and come again beds. There are asters, of which we have eight or nine varieties. The best ones we find are Queen of the Market, Giant branching, Hohenzollern, Daybreak Comet, Truffaut's Paeony, and any annuals we care about, including always a wide band of that dear old flower, mignonette. This is edged by a row of balsams, four feet deep. These make a good hedge to tell where our vegetables commence.

Twenty-two.—Rhubarb.

Twenty-three.—Tomatoes.

Twenty-four.—All kinds of small vegetables. We do not attempt potatoes.

Twenty-five.—Herbs. In this bed we grow such as are required for the house, namely, lavender, lemon thyme, thyme, broadleaf sage, winter and summer savory, sweet marjoram, horehound and tanogon. The top of the bed is bordered by parsley and the side next to bed three is bordered by chives which run down by the vegetable beds.

Twenty-six.—We use this space for our hot and cold frames and when they are removed the space is used for a relay of small vegetables.

Twenty-seven.—Are red currants, alternating with gooseberry bushes. Between these bushes we have a band a foot wide fo the common field poppies, mixed with Shirley poppy.

Twenty-eight—Dump of grass clippings and garden refuse. This is hidden from view by large Russian sunflowers.

Twenty-nine.—Black currants, eight varieties. Scarlet runners are trained over the fence behind the bushes.

Thirty.—Blush roses and Penzance briars (sweet briar). In front of these are Sweet William in all colors and great variety.

Thirty-one.—This bed we are only starting. It is well shaded by elm trees, so we are putting in flowers that love the shade, such as foxglove, monkshood, columbines, and others that we may think of later and which we are growing in our seed bed.

Thirty-two.—Driveway. The fence back of thirty-one and thirty-two is covered with the common morning glory.

Thirty-three. At the point of bed fourteen we have a large bush of bleeding heart.

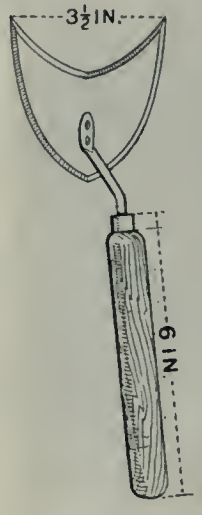
Thirty-four.—Extension kitchen of house covered with Virginia creeper.

We do not grow any flowers in the front, only climbing vines to cover the veranda, as the Crimson Rambler, and Dorothy Perkins climbing rose, and Woodbine honeysuckle. We prefer to have our garden at the back, where we can work amongst them without being in full view of the street. Our sunken lawn is well shaded by trees and makes a cool and comfortable lounging place on a hot summer's afternoon.

Useful Garden Implement

W. J. Justice, Barrie, Ont.

An implement that I have found very useful in my garden is the little weeder here illustrated. It was made as follows:—The blade was cut with a cold chisel from a cast away hoe blade, and the cutting face filed to an edge. The stem was rivetted on by a blacksmith. It could be put on by any one having a breast drill.



This tool is exceedingly handy for close work about plants of any kind as it can be used in either hand. With a little practice one could be used in each hand. It is especially good for weeding beans and Dutch set onions.

Sweet Pea Culture

W. T. Macoun, C.E.F., Ottawa

An easily worked clay loam is the best kind of soil for sweet peas. It is usually a moist cool soil and fairly rich in potash and phosphoric acid. With the addition of well-rotted barnyard manure thoroughly incorporated with it, it should be sufficiently rich to grow very good sweet peas. Sweet peas are liable to run too much to vine if planted in clay loam and heavily manured, hence, as stated before, only moderate fertilizing is necessary or desirable.

I have had good results in growing sweet peas in light sandy loam soil with a moderate dressing of manure, but if the season were a hot dry one the results would not be so good. If there is no soil available except a sandy loam the surface should be kept heavily mulched for eighteen inches on each side of the row with the lawn clippings during the summer or better still with short manure, on top of which may be put the lawn clippings for cleanliness.

Gardening Suggestions for April

J. McPherson Ross, Toronto, Ont.

We are generally impatient to get to work in the garden after the long winter, and it is a pleasure to feel once more balmy breezes and to see the tender April skies. This may be termed the preparatory month, when we must put into effect the experience gained last year and picture to our mind's eye beautiful new combinations to be tried from study and past observation. For the sake of continuity, we will divide the operations under three heads, namely, the fruit, vegetable and flower garden.

Cions and How to Graft Them

Presuming that all pruning was carried out in the orchard during March, we have still left to do such work as grafting, which is best done in April. Many gardens having young fruit trees of undesirable sorts, are easily transformed into the better kind by the simple operation of grafting. People who desire to have gardens or to do some simple operations, are sometimes frightened by extreme scientific directions from undertaking them. Let me urge them, if they are novices, to make the effort. It simply consists in getting a cion or shoot of last year's growth cut off any time before second growth starts, and attaching it in a suitable place on the tree it is wished to alter. This cutting, preferably from three to four inches in length, can be made either by a sloping cut, figure one, or made wedge shape, as figure two. Figure one cion is used as a slip or tongue graft. As a slip graft it is simply put into the end of a branch that has been cut off. The bark is split, as in figure three. The cion is pushed down the bark and tied firmly with waxed cloth or matting and covered with any medium that will prevent exposure to the air, such as clay or wax.

The wedge-shaped cion is pushed into stock cut off and split, care being taken to see that the back edges of the cion and stock meet evenly on one side. I have given these simple directions, because I think fruit growers should not tolerate a poor fruit variety any longer than the season it bears and proves worthless. Then the art of grafting furnishes opportunity also to the grower with limited space to have many desirable fruits for consumption by securing two or more varieties from one tree.

After care of the graft consists in rubbing off any sprouts that usually shoot from the branch below the graft, as if allowed to grow they would rob the graft of sap. Any system or form of grafting may be tried which convenience may suggest. This applies equally to all fruits. Commence first with plums or cherries, early in April, and finish up with apples and pears. These I have often grafted when the tree was almost in leaf, during the latter part of May. Garden books of all kinds give full directions in regard to grafting. I only draw attention to it here that I may urge fruit growers not to let the month go by without attending to it.

Last year's growth in the small fruits, such as currants, gooseberries, blackberries and raspberries, should be shortened, and old barren wood cut out. Dead shoots or canes in raspberries should be removed. Carry away all litter and rubbish, preparatory to wheeling in good rotted manure to be forked among the bushes. You cannot overdo fertilizing currants and gooseberries as they are gross feeders and to produce fine fruit should be well fed.

HAVE A HOT BED

The first thing to do in the vegetable garden is to make a hot bed which can be placed in the yard or other place convenient for observation. An illustration of a simple hot bed is given elsewhere in this issue, and how to make one was described in the March number. A hot bed in a small garden allows you to grow a variety of plants, such as tomatoes, early cabbage and other vegetables, as well as annuals for the flower beds.

The Garden of a Working Man where Flowers Reign Supreme

The chief flowers grown in this garden, owned by John Henderson, of Hamilton, Ont., were Petunias, Phlox, Drummondi and Marigolds, with a few perennials and shrubs. At the back is a bed of cannas. —Photo by T. J. Davenport.

Those who like mushrooms, and most people do, should get a brick of spawn. break it into pieces, and make holes with a stick in the outside of hot bed, and insert a piece of the spawn in the holes. You will be rewarded later with a crop. The ventilation of the bed must be watched in bright, sunny weather. Give it air by opening the sashes, closing them when cool, and watch out for sudden dips of the weather. During any such cold spell, cover the glass with loose manure, straw or matting.

Dahlia and gladiolus tubers can be started in the hot bed, thus advancing their flowering season, and as spring advances, and use for the hot bed is over, plant some melon plants in it, or cucumbers. When danger of frost is past, store your sashes in a safe place for another season. The old manure of the hot bed comes in fine in the fall for fertilizing perennial beds or bulb borders.

In warm or dry locations, sow lettuce, radish and cabbage plants, and as warm weather advances put in peas and various other vegetables. Fork up the soil around rhubarb, and in your asparagus bed whiten the soil with salt and fork in the mulch or manure which should be given to this valuable succulent. Though in average seasons I prefer May for sowing the ordinary crop of vegetable seeds, still there are sometimes favorable days in April in which to prepare the garden. Never work your soil if at all wet as it is only time lost. It is far better to wait if necessary until June in cold seasons.

The average width between rows is about twenty inches, and the usual depth of soil to cover is twice the depth of the diameter of the seed. Coarse seeds as beans and corn can be covered from two to three inches and others from one-half inch to an inch. One rule to observe when sowing seeds is to firm the soil after covering. There is an old saying that the foot is the best gardener. This can be understood when you think that the pressure of the foot brings the seed directly into contact with the soil, excluding the air, and absorbing the immediate moisture.

As soon as you have sown the seeds, the weeds appear also. Weeds are a necessary aid to the cultivation of the other crop, as their eradication stirs the soil. This lets in the air and saves the soil moisture, or in other words it waters the ground with the hoe.

Be careful when too thick to thin out beets, onions, carrots and parsnips, and when breaks appear to replant with other plants. Every well appointed garden should have an asparagus bed, beside rhubarb and parsley.

GROW SOME ASPARAGUS

Asparagus is so easily cultivated and so highly prized it is a very profitable plant for growers. For a small family a bed thirty by five feet would give plenty of stalks. Some persons go to great trouble to prepare one. If such a bed is to be permanent the result justifies their care. Select a well drained situation. Dig out the soil to a depth of at least twenty inches. Into this trench fill in six inches of rich manure, offal, bones and other rank fertilizer or litter which, if it does not decay immediately serves for drainage, and cover over with good soil, rotten sod, and so forth. When it is ready, procure two hundred plants of Conover's Colossal or Giant variety. This is sufficient to plant a bed of this size, make three rows, eighteen inches apart, with the plants six inches apart. Dig out each row by the garden line a foot deep. Against the bank place your plant, spreading out the roots evenly, having the pips or crowns three inches below the soil; fill in the soil to a level, and tread down firmly. Rake the soil smoothly and place a mulch of two inch manure.

Cuttings of currants, grape vines, and so forth, can be made in the early part of April. They should be planted in good soil to the tip of the bud. A vegetable garden should be planted and managed to have a succession of various plants, so that when one crop is used up, as early peas and peans, you can remove them and plant cabbage or celery. Above all provide plenty of manure. Don't be afraid of having too much. Work it in deeply, and you will have sure results.

PREPARE FOR FLOWERS

Flower beds should be raked up clean, also clean all rubbish off the premises. Divide your phloxes and replant into new soil. Delphiniums, rudbeckias, iris and other quick spreading plants divide and replant. Plant in large groups. Study out combinations for color effects now so as to have them this summer.

The Garden of Mr. Ralph C. Wade, Toronto, Ont.
Read description on this page.

April gives you a chance to revise your border with either shrubs or perennials, and to plant out special effects. Now is the time to pay attention to your lawn by fertilizing, sowing fresh seed on bare spots and giving a liberal top dressing of good garden soil. April showers will do the rest after a good rolling to smoothen upheavals. Do not roll when wet as this packs the soil too closely.

If you have not one, make a rose bed. Follow any form you may wish but the simplest is a well shaped oval rounded well up in the centre. Get your roses and plant early. Late planting is not as successful unless you cut plants hard back. Roses should have young roots, well established, before hot weather sets in. Of course, if plants are in pots you can plant them out any time in summer.

A Backyard Garden

The garden of Mr. Ralph C. Wade, Toronto, illustrated herewith, demonstrates what can be done in the line of beautifying an ordinary backyard. Mr. Wade may be seen in the illustration. The arch under which he is standing is covered with two crimson ramblers, on either side of which are two grape vines, one a fine Roger and the other a Niagara; then a Syringa.

The order of planting next the board fence on the west side, which Mr. Wade has found most satisfactory, is to put dahlias and prince's feather, of the tall variety, next to the fence, then tall pale and dark blue delphiniums, foxgloves and Canterbury bells, then rows of asters, both late and early varieties. Next comes a row of Golden Wave Calliopsis and dark blue larkspur mixed. These bloom early as they are planted with the other hardy annuals in the fall when the border is prepared for winter. They

serve to hide the asters from view until they are ready to bloom, when the calliopsis can be removed.

The borders are about thirty inches wide and have a board inserted at the edge. A row of parsley is sown about the end of March close to the board edge and makes a most beautiful border of green all summer, being both useful and ornamental. The border on the east has roses, paeonies and hydrangeas of the shorter varieties. The verandah which faces the south is covered with clematis, Dorothy Perkins rose and Prairie Belle.

Flowers and Vegetables Together

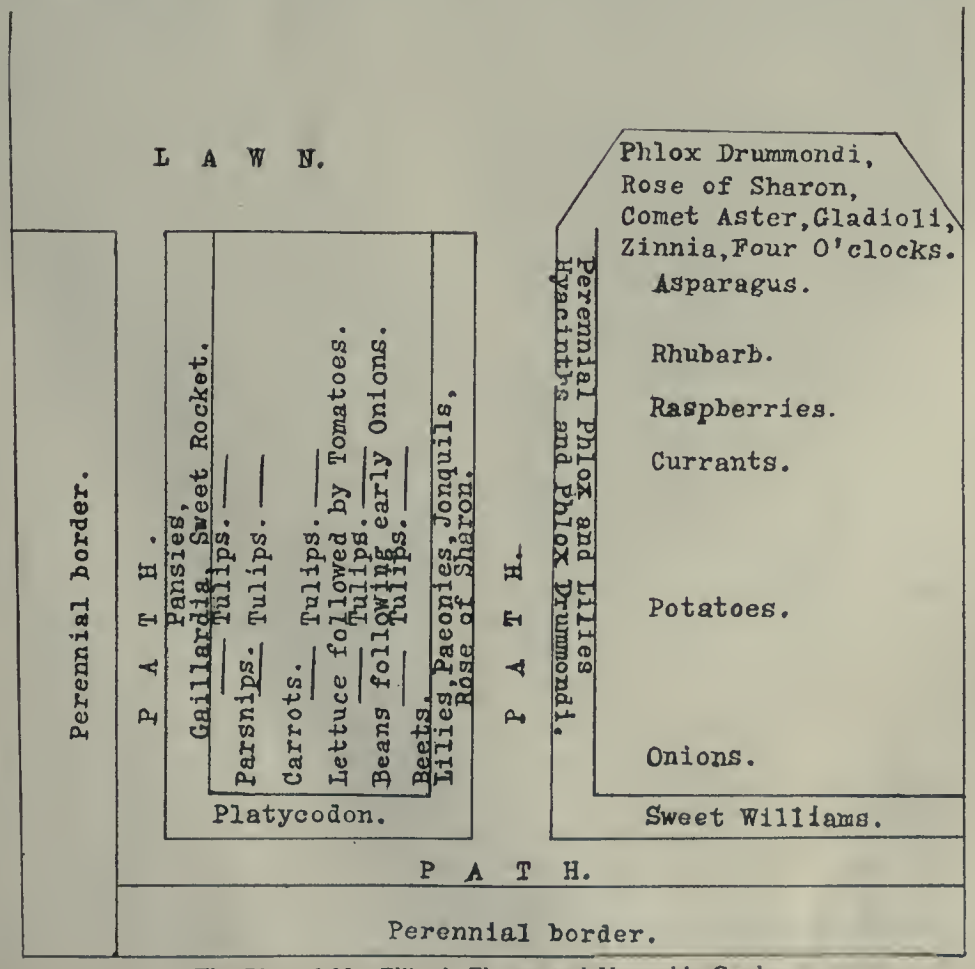
A. J. Elliott, Aylmer Ont.

IT appears to have been the determination of man since all time that flowers and vegetables should be kept strictly separate, as though the one would in some way counteract the usefulness of the other. How often do we see in horticultural papers illustrations of hedges, arches, perystyles and so forth, showing where Mr. So-and-So's vegetable garden begins. No one expects to see the plebeian potato, carrot, and so forth, in the magnificent grounds that are open to the public in Canada, the United States, England, and the continent of Europe, and while they are grand and aristocratic as regards lay-out, taste, and expense, still I have thought, while looking at them ,that our own Ontario flowers, individually, are fuller of sunshine than most of them. But we are apt to be prejudiced. These grand resorts, so ably described by Miss Blacklock and Mr. Collins in THE CANADIAN HORTICULTURIST in past numbers have a two-fold effect. Either they spur one on to greater exertion, and consequently success, or else they depress with the thought that it is impossible for a novice to succeed.

Most of us have more moderate lands, and we have to cut our coat according to the cloth. Owing to a row of maples annexing all the sunlight in my front, I had to figure out how this old idea of man could be repudiated and leave something acceptable in its place. A certain system was evolved, and so far my friends and I seem to be satisfied with the result.

I believe it is the right plan for the smaller gardens, and I was pleasantly surprised to see, when in England, the idea was quite common. It is surprising what can be made to grow on a small piece of land adopting the system here shown. This is purely ,as can be seen, a mixed garden. Everything that we like in the vegetable line is raised, except melons. It will be perceived that there are flower borders around all but the south side, and that the jumbled condition of the two centre ones and the left-hand plot is due to the fact that there is a double crop there all the time. Suffice it to say that the tulips, jonquils, hyacinths, and so forth are through and out of the way before the other things come on. Try this idea and mark the surprise of your friends who in early spring visit you and find the bulbs out, when they come later will find the same land carrying splendid crops of vegetables. Do not forget, however, that there must be rotation of all.

The wedge-shaped bed driven into the lawn was very pretty this year. About ten feet back is an asparagus bed, which is allowed to run up after we are tired of it. Then follow, according to size, four o'clocks, zinnias, gladioli, branching asters, phlox Drummondi, and rose of Sharon, the shortest. When all were in bloom a glorious bank of flowers was the result. Still, it could be made better by the elimination of the two rows of asters from the fact that all the others were in bloom long before and after the asters blossomed. This year their places will be filled with, say, balsams and stocks. Then, I think, it will be about perfect.



The Plan of Mr. Elliott's Flower and Vegetable Garden.

Plants for Shady Places

Wm. Hunt, O.A.C., Guelph, Ont.

(Concluded from March issue)

The following lists of perennial and annual decorative plants will possibly help to some extent in the matter of the selection of plants that are benefited by being given some degree of protection from the heat of the sun. The following is a list of hardy border plants:

Aegopodium podograria variegatum (Gout Weed), a running rooted plant with silvery white and green foliage, suitable for planting under trees; Aconitum (Monk's Hood or Wolf's Bane); Acorus (Sweet Flag); Ajuga (Bugle Plant), low growing, mostly creeping plants that like shade and moisture; Allum Moly, most of the varieties of decorative Alliums like partial shade; Anthericum Liliago (St. Bernard's Lily), there are several hardy varieties of the Anthericums suitable for planting in borders; Astilbe Japonica (Spirea Japonica), in the more southern sections of Ontario the several varieties of the Astilbes are very useful for planting in moist, shady positions; Caltha palustris flore pleno (Marsh marigold); Convallaria majalis (Lily of the Valley); Camassia esculenta; Dahlia, partial shade during the heat of the day, a short distance from the north side of a building desirable; Dicentra (Dielytra or Bleeding Heart), D. specta-

Spirea Japonica—A Shade Loving Plant

bilis; E. eximia; D. formosa and the wild D. canadensis (Squirrel corn) succeed best in a partially shaded place; Epimedium rubram (Barren Wort), several varieties: Funkia (Plaintain or Day Lily), numerous varieties; Ferns, all hardy kinds; Gentiana excisa (Gentian); Helleborous Niger (Christmas Rose); Hemerocallis (Day Lily); Hepatica (Silver Leaf); Hibiscus Moschuetos, large flowering Mallow, there are several desirable varieties of these; Iris (Flag). Almost all of the different types of iris succeed best when shaded from very hot sun; Liliums, all hardy kinds ,especially late flowering kinds, like a little shade; Linaria dalmatica and L. macedonica; Lobelia Cardinalis (Cardinal Flower); Lysimachia (Loose-strife), several varieties, especially Lysimachia mumularia (Moneywort), being very useful for planting underneath trees; Lythrum, Purple Loose-strife; Mentha (Mint); Monarda didyma (Bergamot or Oswego Tea; Nepeta (Cat mint); Paradisea Liliastrum major (St. Bruno's Lily); Podophyllum pelatum (Duck Foot or May Apple); Polygonatum multiflorum (Solomon's Seal); Primulas, all of the garden primroses; Pulmonaria maculate or P. officinalis (Lungwort); Ranunculus acris flore pleno (Double Buttercup or Batchelor's Button); Saxifraga crassifolia, thrives well planted under trees; Spirea (Meadow Sweet), all herbaceous spireas succeed best in partial shade; Thalictrum (Meadow Rue), several varieties; Tiarella (Foam Flower or False Mitrewort); Trillium grandiflorum (Wake Robin); Trollius (Globe Flower), several varieties; Valeriana alba (Garden Heliotrope); Vinca minor (Periwinkle), several varieties; Viola (Violet), all of the garden varieties.

ANNUALS BENEFITTED BY SHADE

Convolvulus minor (Dwarf Convolvulus); Digitalis (Foxglove); Lavatera (Annual Mallow); Lobelia, several varieties Malope grandiora (Large flowering Mallow), Lophospemum scandens, trailing plant; Maurandya, climber; Mimulus (Monkey flower); Nicotiana affinis and N. sylvestris; pansies; Tropæolum canariense (Canary climber).

There are very few annuals that require much shade. Almost all are sun-loving plants of some degree of intensity.

LAWN PLANTS

Almost all greenhouse plants, especially foliage plants, such as palms, aucuba, Norfolk Island pine, bay trees, rubber plants, aspidistra, ferns and similar plants are useful to stand out in sheltered and shady positions on the lawn in summer time. Not only are the plants useful from a decorative point of view on the lawn, but this treatment is also very beneficial to them.

There are a few flowering plants that are also useful for temporary lawn decoration in summer for shady positions. Fuchsias, pot hydrangeas, Plumbago capensis, Clivias or Imantophyllums, Agapanthus umbellatum (African Lily), and Japanese lilies are a few of the plants that are very useful for decorating shady positions temporarily during the summer season.

Fertilizers for the Garden

Frank T. Shutt, M. A., Dominion Chemist, Ottawa

BEFORE making recommendations as to fertilizers that will be found useful for general garden purposes and special crops, there are one or two considerations of a fundamental character that should be discussed. Too much emphasis can scarcely be laid upon the importance of previous preparation of the soil, not only by thorough cultural methods (including drainage, if necessary) but by liberal dressings of good, preferably rotted, manure, well worked into the soil. No subsequent application of fertilizers can take the place of this treatment, though such may very materially increase the yield in some cases where the soil is naturally poor and the supply of manure limited. For the larger number of garden crops, and especially vegetables, the soil conditions should be such as to induce rapid and continuous growth.

Quality in vegetables is a most important desideratum; it implies succulency, crispness, absence of woody fibre or stringiness, of pungency and bitterness. Vegetables so characterized are the product of a quick and uninterrupted development and to ensure this growth there must be a warm, moist, mellow, well aerated loam with a large reserve of available plant food. Such a soil can be obtained and maintained only by a constant enrichment with humus-forming material, the very best source of which is manure. The use of fertilizers must be supplemental to and not as a substitute for manure, for fertilizers can do little towards making the soil an agreeable habitat for plants though they may be of the greatest value in performing one important function of the soil, the furnishing of available food for plant growth and reproduction.

NATURE OF FERTILIZERS

Commercial fertilizers are materials that supply nitrogen, phosphoric acid and potash—the three essential elements of fertility—in a more or less readily available form. Their value depends simply and solely on the percentages of these elements they contain and the availability of this plant food. Lack of space will prevent any consideration in the present article of the nature, composition and origin of the numerous substances used as fertilizers and in the making of commercial fertilizers as found on the market. Many of them are chemical compounds such as nitrate of soda, and sulphate of potash, others are by-products from manufactories of various kinds, such as basic slag. The intelligent gardener would do well to make himself conversant with their nature by consulting some work on the subject, such as "Fertilizers," by Voorhees (Macmillan Co.), or "Manures and Fertilizers," by A. D. Hall (Murray), both excellent books.

PHOSPHORIC ACID AND POTASH

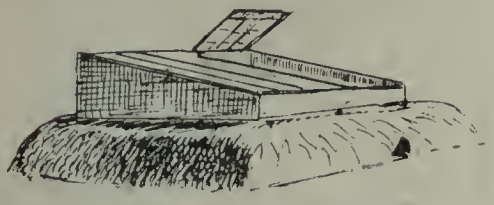
One or two words must be said on the particular function or part played by nitrogen, phosphoric acid and potash, since such will be of assistance in compounding fertilizers for special purposes. While all three are necessary for growth, nitrogen is the dominant element of fertility; its outstanding property is to promote leafy growth. Deficiency in nitrogen results in stunted growth, with yellow and sickly foliage. Excess in the soil of this element will induce a large development of stem and leaf, prolong the vegetative period and retard seed formation. On the other hand excess of available phosphoric acid shortens the growing period and hastens seed formation, and the ripening of the crop. It is particularly valuable in wet seasons and on "late" soils in districts subject to early frosts.

Potash is needed more especially for the changes that take place within the plant and which result in the conversion of the crude food materials absorbed by root and leaf into the substances forming the various vegetable tissues. Its function in aiding starch formation is a valuable one. It is this property that makes potassic fertilizers so useful for the potato crop. Possibly, like nitrogen, excess of potash delays maturity; a deficiency in potash has a marked effect in retarding the plant's normal development. These considerations point to the desirability of a fairly well balanced fertilizer, that is, one containing all three

elements in good proportions, to meet general requirements, and at the same time point the way to compounding special mixtures to suit special cases.

FERTILIZER MIXTURES

Horticulture is a branch of "intensive" farming. This means that in looking to secure a maximum production of crop we use an excess of available plant food. The garden soil is to be regarded as a bank in which we seek to have always to our credit a large amount of available funds. This excess of plant food, however, from the considerations in the preceding paragraph, must be a well balanced one. For garden crops in general, including fruits and vegetables, the following may be used, the application ranging from five hundred pounds to fifteen hundred pounds an acre, according to the condition and character of the soil, and thoroughness with which we intend to cultivate and take care of the crop: Nitrate of soda, 200; superphosphate, 300; bone meal, 200, and sulphate of potash, 200 lbs. Mix well just before using and broadcast on the prepared soil in the spring and thoroughly incorporate with the surface soil. An admixture with, say, an equal weight of dry loam will facilitate an equable distribution of the fertilizer. If the soil is sour, poorly drained and deficient in lime, basic slag (an alkaline phosphatic fertilizer) may be substituted for the superphosphate in this formula. If the soil has been well manured for a number of seasons, the nitrate of soda may be reduced to one hundred pounds.



A Simple Form of Hotbed

A description of how to make a hotbed was published in the March issue of The Canadian Horticulturist.

The purchase of the various fertilizer ingredients and home mixing is generally to be advised, as being cheaper than buying a brand of ready made fertilizer and allowing the gardener to more economically use his plant food by modifying the proportions according to the nature of the soil and of the crop to be fertilized. Thus, sandy soils are naturally poorer in potash than clay soils; soils that have for years been liberally dressed with manure will be richer in nitrogen than loams that have been scantily dressed; vegetables and fruits make a large demand on the potash stores of the soil, while cereal crops are very moderate in their potash requirements. These and many similar considerations allow the intelligent man to alter the proportions somewhat in such a formula as we have given and permit a considerable saving.

If, however, on the score of convenience it is decided to purchase a ready-mixed fertilizer, one having a guaranteed analysis as follows may be chosen in the place of the foregoing: Nitrogen, three and a half to four and a half; available phosphoric acid, seven to nine, and potash, eight to ten per cent.

(To be continued)

Celery for the Home Garden

George Baldwio, Toronto, Ont.

No home garden, no matter how small, is complete without a trench of celery, though from personal observation in the gardens of people whom I am acquainted with, the proper quality and size of celery is not brought out as it should and can be done.

The elements of success in celery growing are many. First and foremost among them is a love for your work. If you do not like your job, you will never be a real success.

By the time this is in print it will be too late for sowing the seed of early celery, but you can procure all the plants you require from local seedsmen at reasonable rates.

Providing you can make room for a three row trench, I would recommend White Plume, Paris Golden and Rose Ribbed Paris. As soon as seedlings have got three leaves, prick them out into more space, giving them about one inch of room each way, keeping them as close to the glass in the hot bed as possible to prevent them getting too long and spindly. Stir the earth frequently with a small pointed stick and when they are about two inches high transplant again, giving three inches of space. About the second or third week of May they will be ready to plant out in the trench.

Early Vegetables

Miss M. J. Dubeau, Warren, Ontario

Why do not our Canadian gardeners grow more early cucumbers? It seems to me that many more might be grown where the climate is not so severe as it is up here in the Nipissing District. Last year I had my first experience in the use of a hotbed. The seed was not put in until the last week in April nevertheless I succeeded in securing lettuce and radish, besides cucumbers. I secured the first cucumbers on June 25th.

From some that I transplanted to the open ground on July 12th I gathered a cucumber which weighed a pound. I was somewhat astonished when our fruit dealers told me they were still handling imported cucumbers which they were selling at ten cents a pound. I also surprised my neighbors by growing some early ripe tomatoes. These I kept pruned severely. They produced ripe tomatoes on August 1st, which is considered early up here for very few ripe tomatoes have been grown, and none to my knowledge before September when heavy frosts are usually expected.

Planning the Vegetable Garden

W. J. Kerr, Ottawa, Ont.

At this season of the year, the gardener and those fortunate enough to have a garden, should be planning for the future crop. By the time of the appearance of The Canadian Horticulturist for April, many will have hot beds made and seed already sown. The preparation and caring for a hot bed is a very interesting part of gardening but where it is not possible for the amateur to make a bed he may arrange with some professional gardener to start his early vegetables, such as cauliflower, cabbage, tomatoes, peppers, melons, cucumbers, asters, verbenas and others. Then, when they are ready to transplant, the amateur may get his plants in the flats in which they have been started and transplant them into cold frames or hot beds.

It is well to secure the best seed obtainable. Cheap seed is usually dear at any price but it does not necessarily follow that the most expensive is the best. I would recommend that the readers of The Horticulturist write the seedsmen advertising in this paper, and get their catalogues, and select the varieties of each class of vegetables most suited to their wants. These seeds should be in their hands before planting time and where possible should be tested for germination and if of low vitality should be discarded and fresh seed procured elsewhere.

It is always well to have the land plowed or spaded in the fall so that such vegetables as peas, carrots, onions, parsnips, lettuce and radishes may be sown as early as the land is in nice workable condition. The soil should be raked down to a fine tilth and the seed sown a depth corresponding with the size of the seed. That is, very small seeds should be sown in very shallow trenches, while larger seeds should be sown deeper. It is always well to sow in long rows if possible to permit of the use of the wheel hoe in cultivating, as it materially lessens the labor of cultivation. Frequent and thorough cultivation is desirable to keep up a steady and rapid growth and prevent weeds from robbing the plants of food and moisture. The frequent stirring of the soil about the plants helps preserve the moisture in the soil for the support of the plants during dry weather.

On the first opening of spring it is well to make a general clean up of all rubbish about the garden. Burn it, as you will thus destroy many injurious insects and foungous pests that have hibernated on it, and which await the warm weather to begin their attacks.

The Canadian Horticulturist

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PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

1. The Canadian Horticulturist is published on the 25th day of the month preceding date of issue.
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7. Articles and Illustrations for publication will be thankfully received by the editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of the Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant, we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed

THE CANADIAN HORTICULTURIST.
PETERBORO, ONT.

EDITORIAL

A LAND BOOM IN ONTARIO

Ontario is beginning to come into her own. Her possibilities as regards the production of high grade fruit are now being appreciated at something like their real worth. In all the principal fruit growing sections of the province a new enthusiasm is manifest among the growers as regards the possibilities of their districts and a new spirit of optimism is noticeable in the contributions that reach our desk.

Norfolk county was one of the first to awake. The transformation that has been made in portions of that county cannot be appreciated by anything less than a visit to the districts there where thousands upon thousands of dollars are being invested in lands and in the setting out of orchards. Lambton county is now beginning to advertise her possibilities and there are indications that Huron county will soon be heard from in no uncertain tone. A great reformation is taking place also along the north shore of Lake Ontario where are located some of the largest orchards in the province. A considerable number of these orchards range from twenty-five to almost one hundred acres in extent. On the farm of Mr. W. H. Gibson, of Newcastle, Ontario, there are rows of apple trees a mile long, something, it is said, that it would be hard to duplicate elsewhere on the continent. The Georgian Bay district, also, is sharing in the incipient boom.

There is only one surprising feature about the situation: This change should have occurred long ago. Land as good as people would have to pay five hundred and six hundred dollars for elsewhere may be purchased in Ontario for seventy-five to one hundred dollars an acre. The ubiquitous land agent, gaining courage from the evidence of a determination on the part of the provincial government to encourage emigration as well as from the success of the provincial apple show and trial orchards, about which so much has been heard during the last few years, now foresees a chance to buy and sell fruit land at a profit. Therefore, he is making his appearance felt. As the early robin foretells the near approach of summer so the land agents now working in Ontario presage by their operations a wave of interest, during the next few years, in the fruit lands of Ontario such as the province has never known. In this connection the Ontario Fruit Growers' Association and the government itself should prepare to take all possible steps to prevent the investing public, including as far as possible the British public, from being defrauded by wild cat schemes such as have injured many fruit districts. The possibilities of the fruit lands of Ontario are so great their best development should not be allowed to be hampered by frauds of any kind.

THE DOMINION ORGANIZATION

So many matters of importance pressed for attention during the brief three days of the recent Dominion Fruit Conference held in Ottawa a number did not receive the consideration that their importance deserved. This was true of the proposal to form a Dominion Fruit Growers' Association. It was decided to form such an association and preliminary officers were elected, but pressure of other work did not permit of the details of organization being worked out thoroughly.

Canada is a large country. It's fruit districts are scattered. They extend, at wide intervals, from the Atlantic to the Pacific. This situation creates inherent difficulties that will militate against the work of such an organization. It will never be possible to fully overcome the handicaps imposed by the time required to conduct correspondence and the expense of holding meetings. As time advances, however, methods of reducing these to a minimum will be discovered and the usefulness of the association will increase. In the meantime, the officers of the association can render valuable assistance to the fruit interests by following up as closely as possible the work done at the recent conference in order that the decisions there reached may be carried into effect with the least possible delay and in the manner most likely to give the best results. One of the duties of this organization should be to urge that a date for the holding of the next conference shall be set sufficiently soon to ensure a greater interest being taken in its deliberations thereby increasing its possibilities for usefulness to the fruit industry.

Members of the Berlin Horticultural Society waited on the city council during March and obtained a grant of one hundred and fifty dollars to assist in the carrying on of the work of the society. A number of other societies in Ontario obtain annual grants from their town and city councils. The Windsor Horticultural Society has done especially good work in this respect. Societies, especially those located in the smaller towns and cities where there are no park commissions or park committees of the municipal councils might well follow the example set by these societies. The average council is willing to make a reasonable grant for horticultural improvements when once assured that the money thus granted will be handled by responsible men capable of spending it to the best advantage. Societies that will prepare a definite plan of work, especially when they gain the support of their local boards of trade, may have every reason to expect, upon laying their plans before their municipal councils, to receive liberal financial assistance.

Horticultural societies that may be looking for opportunities to render public service this year might follow with advantage the plan of picking out certain streets for improvement and then offering prizes to the residents along such streets for the best boulevards, lawns, window-boxes and other horticultural embellishments. By following this plan for a period of a few years a wonderful improvement can be worked in the driveways of any town or small city. Property holders along the streets to be improved can generally be induced, when approached in the right way, to contribute to the funds required for the carrying on of the work. Municipal grants also are sometimes available. These streets soon constitute driveways of which the municipality becomes proud, and as the work increases in public favor its extension to other districts becomes possible. Such activities as these always call for the expenditure of much time and energy on the part of a few public spirited persons who seldom receive the public appreciation that their efforts deserve. The love of horticulture, however, is so deep in the hearts of at least a few people

in every community, their services are generally available when opportunity calls.

The owners of town and city gardens that are limited in extent often regret that lack of space prevents them from growing as many fruit trees as they would like. Such people might well try grafting other varieties to those they have in order that they may, as suggested elsewhere in this issue by Mr. J. MacPherson Ross, of Toronto, obtain two and three varieties of fruit from one tree. The work of grafting is interesting, and when done with care returns most satisfactory results.

The suggestion made in this column last November that the Ontario Horticultural Association should offer prizes annually for the best essays on some subject relating to the growing of flowers, the prize winning essays to be published in the annual report of the Association, was acted upon favorably by the members of the association at their annual convention in Toronto last November. Details of the competition have not yet been arranged. Officers and members of horticultural societies will do well, however, to keep this matter in mind. Final arrangements for the competition should be completed at as early a date as possible to enable competitors to write on the subject during the spring months and thus insure the publication of their essays at a season when the cultural directions they will contain will be of the greatest benefit.

Honest Advertisers

One by one leading papers and magazines everywhere are adopting the policy of excluding all patent medicine, fake or objectionable advertising, and are opening their columns only to those advertisers whom they feel they can thoroughly recommend. Just recently a leading United States publication decided to take this step, even though it meant a loss in direct revenue from advertisers who last year paid them $40,000 for space in their publication.

Publishers are realizing that if they are to be fair to their readers and reputable advertisers, they have no more right to print lies or objectionable statements in their advertising columns than in their reading columns.

This policy of clean advertising has always been a part of The Canadian Horticulturist. We publish no advertisements we have reason to feel we cannot thoroughly endorse. If we are in doubt about an advertisement, it is left out. Only a short time ago we were offered a good sized advertising contract for a firm, which we believed would do all it promised to do, but as the copy did not "look" just right, it was refused.

It costs money to carry out this policy, but it wins the confidence of our readers, who know they are patronizing reliable firms when they buy from those who advertise in The Canadian Horticulturist. They know that the appearance of an advertisement in The Canadian Horticulturist is equivalent to a personal letter of endorsement of the advertiser from the publisher.

As proof that this policy pays, and that advertisers are finding it profitable to use space in The Canadian Horticulturist, we have only to call attention to the increasing volume of advertising carried, which for both February and March exceeded any previous issue.

Readers of The Canadian Horticulturist can show their further appreciation of the stand we take for clean, truthful advertising by patronizing advertisers who use the columns of the Canadian Horticulturist, and by telling them where they saw the advertisement.

We do not admit to our columns advertisers except such as we believe are thoroughly reliable.

PUBLISHER'S DESK

The front cover of this number of The Canadian Horticulturist shows a view in the garden of one of our Peterboro subscribers, Mr. G. Walter Green. This is one of a number of fine private properties in the city which do much to make "The Electric City" during the summer months one of the most attractive cities in Ontario.

This is our first real garden and spring planting number. We hope that it will prove interesting and helpful to our readers. Have you noticed the high standing of our various contributors. Almost without exception they are people who are well known to the public as authorities on the subjects on which they have written. We feel that the readers of The Canadian Horticulturist are entitled to the best class of reading that we can furnish them, and therefore use the utmost possible discrimination in the selection of the articles that find admission to our columns. Amateurs, however, should never be afraid to let us hear from them. A number of the best articles that have appeared in The Canadian Horticulturist this year have been contributed by amateurs unknown to the great majority of our readers. Often it is the experience of men and women who have done things successfully in a small way that proves the most helpful to others similarly situated. If you have a good idea never hesitate to pass it on to The Canadian Horticulturist.

Our plans for the May issue of The Canadian Horticulturist provide for a number that will be filled with interesting, helpful information. A feature of the number will be a profusely illustrated article, dealing with pruning as it can be performed during the spring. This article will be by Prof. E. M. Straight, of Macdonald College, Quebec. We will have another article by Mr. Gordon Bunting, of the Central Experimental Farm, entitled, "What Cultivation Shall I Give the Orchard." Mr. Bunting's article in this month's issue was furnished at short notice when it was found that Mr. W. T. Macoun would be unable to handle the subject that Mr. Bunting has treated so capably. Features of the floral pages will be a planting table for the months of May and June that is being prepared especially for the readers of The Canadian Horticulturist by Mr. Wm. Hunt, of Guelph.

Mr. F. E. Buck, who is in charge of the floral division of the Experimental Farm, Ottawa, and whose articles are becoming well known to our readers, will contribute a special article on perennials. We expect to publish another interesting description of a Canadian garden as well as several short articles that will be practical and helpful. A feature of the vegetable department will be an article by Prof. Zavitz, of Guelph, which will give the results of experiments in potato growing. These articles will be illustrated. This will ensure the issue presenting a pleasing appearance throughout.

Once again The Canadian Horticulturist has been breaking records. The March number was the largest March issue we have ever published. It was the same size as the Special Spraying Number for February, which was the first issue of that size ever issued. The amount and value of the advertising carried far exceeded any previous issue for March, and was only slightly behind the February issue which holds the record so far. This is only another indication that readers of The Canadian Horticulturist have confidence in its advertisers and are patronizing them liberally as our advertisers are finding it profitable to use The Canadian Horticulturist to let our readers know about their goods.

The Public Library of Toronto is desirous of securing volumes of The Canadian Horticulturist for 1906, 1907 and 1908 to complete their files. Have any of our readers complete files of the paper for one or more of these years that they are willing to part with? If so will they kindly communicate with us or direct with the Public Library, Toronto, which will be glad to purchase either a complete file of copies for these years, or the bound volumes should they be available.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

PORT HOPE

The Port Hope Society has appointed a lookout committee to take any steps in the interest of the society looking toward the improvement of the town that may be deemed advisable. The society had a membership last year of 139. Its receipts were $265.07 and its expenditures, $232.05.

PERTH

At the January meeting of the Perth Horticultural Society attention was given to the gooseberry and currant. Thos. Cole, an old country gardener, and a member of the society, had present bushes in the rough and gave the members a practical lesson on pruning. In addition to pruning he answered a score of questions aqgressed in regard to the best methods of cultivation of these small fruits

At the February meeting, Rev. A. H. Scott presented to the society detailed information upon the work done at the Rittenhouse Public Gardens and the Broadview Boys' Farm. Both the January and February meetings were held when the thermometer was striving to make a record for cold, and yet both engagements had spring in view, and both occasions were a preparation for the growing time that is approaching.

The Third Dominion Fruit Conference

In the report of the Dominion Fruit Conference published in the March issue of THE CANADIAN HORTICULTURIST the report, through an error in the making up of the forms, was broken off without explanation in the midst of discussion of the fruit census as given by Mr. W. W. Moore, Chief of the Markets Division, Ottawa.

The total number of fruit trees in 1901 was given as 21,128,197, and for 1911 as 20,812,556. The number of bearing trees in 1901 was 14,926,027, and in 1911, 12,794,357, a decrease of 14 per cent. The number of non-bearing trees reported was more encouraging as they were given as having been 6,202,170 in 1901, and as 8,018,199 in 1911, or an increase of 29 per cent. Nova Scotia and British Columbia showed large increases in the number of both bearing and non-bearing apple trees, while Ontario showed a heavy decrease in the number of bearing apple trees, as did also Quebec and New Brunswick.

Mr. Moore explained that while there had been a great increase in the planting of apple trees in the different provinces there had been a heavy decrease in the old bearing orchards planted many years ago in localities not well adapted to fruit growing. A number of the delegates expressed doubt in regard to the correctness of the figures, and claimed that they did not correspond with what they knew to be the case in portions at least of their respective provinces. Mr. Moore himself did not seem any too sure that it would be safe to rely on the correctness of the figures, but gave them for what they were worth.

Mr. A. W. Peart, of Burlington, who had furnished valuable information in regard to the acreage and production of fruit in Canada at the last conference, gave some additional information as compiled by him recently from various Government and other sources. He estimated that the fruit interests of Canada represent an investment of $78,621,800, and that the fruit crop of Canada each year yields the growers a return of 25 per cent., on the average, upon this investment. He placed the apple acreage at 252,657 acres, representing a capital value of $50,531,400. Further mention of Mr. Peart's figures will be made later.

The balance of the Thursday afternoon session was devoted to a discussion of the recommendation and resolutions that had been forwarded by the various provincial associations, practically all of which were referred to the various committees for consideration. A feature of this session was the presence of His Royal Highness the Duke of Connaught, Governor-General of Canada, who made a brief speech, and who remained to listen to a considerable portion of the discussion. After the conference the Duke was sent some fruit from each of the provinces as contained in the exhibit at the conference.

THE PRIME MINISTER SPOKE

At the Thursday evening session, addresses were given by the Right Hon. R. L. Borden, Premier of Canada, and by Hon. Mr. Burrell. Both speakers assured their hearers that the Dominion Government was anxious to do everything possible to promote the fruit interests of Canada as well as agriculture generally.

A valuable report on the fruit resources of Canada, as well as of the fruit possibilities of the different provinces, was presented by Mr. W. H. Bunting of St. Catharines, who spent several months last year conducting a special inquiry into the fruit growing industry of the Dominion at the request of the Dominion Government. Mr. Bunting gave an outline of the conditions as he found them in each province, and incidentally made numerous helpful suggestions. A much more complete report of his investigations is to be published later in bulletin form by the Government. Further reference to it will be made in THE CANADIAN HORTICULTURIST.

The balance of the Friday morning and afternoon sessions was devoted to the consideration and discussion of the various committee reports. These resulted in the passing of the resolutions already outlined and in the formation of the National Fruit Growers' Association. The conference was concluded by the passing of formal votes of thanks to the Government for calling the conference and to the Government officials who had helped to make it a success.

A standing vote of sympathy was extended to Mr. Clifford Jack, of Chateauguay Basin, Que., one of the delegates, who had been summoned home on account of the sudden death of his mother, Mrs. Annie L. Jack. The results of the transactions of the conference on the fruit interests of Canada will make their influence felt for many years to come.

The demand for information about the famous Rittenhouse school and garden, at Jordan Harbor, Ont., has led to the issuing of an extremely handsome booklet describing the work of the garden. It is printed on high-grade paper, profusely illustrated, and gives a most interesting description of the Rittenhouse Public School and Garden.

Cheap Roses

If you want Roses that will do anything at all then don't *experiment* with cheap slips and cuttings bought from so-called Nursery concerns, but buy *two year* old Canadian grown plants from *reputable* Rose growers, who have raised them on their own nurseries and not imported them. Imported gowns may be attractive and alluring, but imported Roses and Shrubs are by no means satisfactory.

The climate of France and Holland is quite different from ours and plants from these countries feel the change sorely. Roses and Shrubs offered at "Bargain Counter" rates have undoubtedly been imported from England, France or the Netherlands, and are expensive even at the lowest prices.

Buy your Roses, Shrubs and trees from reputable nurserymen growing stock in your own latitude

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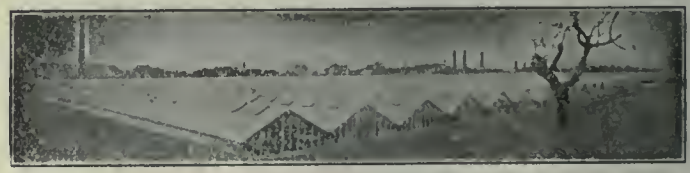

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A Hindrance to Cooperative Fruit Growing*

A. McNeill, Chief, Fruit Division, Ottawa

A FORMIDABLE but insidious hindrance to co-operation in fruit growing is the want of proper legislation to enable farmers to get together easily, safely and effectively as an incorporated body. It so happens that nearly all the improvements which we are trying to impose upon the rural population have been planned and elaborated by city people, by those who have not had, for years at least, any practical association with rural affairs and who know the problems only as they see them from a city office window.

The legislation which works most effectively in the financial combinations of commercial life, where capital is the chief feature, is very gravely defective when applied to a rural affair, which is a combination of men and industries, and where capital, though absolutely necessary, is yet incidental. This particular defect in our legislation is fundamental, and we must look for many failures and grave difficulties unless we can secure proper co-operative legislation.

CO-OPERATIVE OR JOINT STOCK

There is a marked difference between legislation quite suitable to our great commercial and financial undertakings where capital dominates, and the legislation required for rural organization where men and their occupations are the chief factor and where capital is subordinate. The ordinary joint stock company is a mechanism whereby a number of men can unite to act as a unit. Through their officers, they lose their individual identity and speak as a single unit, but in determining what that voice shall be, it is the number of shares that constitutes the voting power, that is, it is the amount of capital invested that gives weight to the members composing the corporation. We may speak of it, then, and in no derogatory sense, as being capitalistic, and almost of necessity autocratic. On the other hand, an apple selling association or a co-operative evaporator, or in fact any other rural organization, requiring incorporation whereby the individuals composing it may speak as a single individual, find that capital is only incidental, the chief thing being the industry. It is the value of the product handled by the association that determines each man's interest in this rural body.

Roughly speaking, the capitalistic organization such as the ordinary joint stock company is a combination of capital simply. A rural organization must, of necessity, be a combination of men. This principle is so well established by the experience of all countries that it is somewhat remarkable that it has not permeated Canadian legislation. Those who have read the history of co-operation will have remarked that, while there are individual societies composed of men of exceptional ability and public spirit that have succeeded with a joint stock organization, yet speaking generally co-operation has been a dismal failure until suitable legislation was provided or at least until antagonistic laws have been repealed. I would scarcely care to be so positive upon this point if I were not sure that I have with me the history, not of one country

*Extract from an address on cooperation delivered at the Dominion Fruit Conference in Ottawa.

Douglas Gardens

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CHINA ASTERS

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Groff's Hybrids, choice section of light colored sorts 25 for 75 cts.
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Carriage prepaid.

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Var. Pfitzeri, a free, continuous bloomer until hard frost comes. It should be planted in spring, taken up in the fall, packed in sand or soil and wintered in a cool cellar. It increases its kind and is a very satisfactory plant. It grows 3-4 feet high, and the spikes of bloom are of a rich orange-scarlet. Is most effective when planted in clumps. Each 15 cts.; 10, $1.25. Carriage prepaid.

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330	5	4.53
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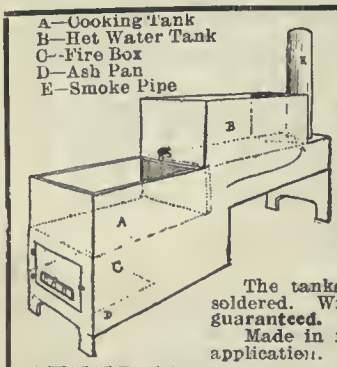

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The tanks are made of heavily galvanized steel, thoroughly rivetted and soldered. Will not leak. They are built to give satisfaction, and are guaranteed.

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I grow the Williams Improved, Parsons Beauty, Splendid and Michel's Early.

Last year the yield from 2 3-4 acres was 31,500 boxes, and in 1910 the yield from 1 1-5 acres of Williams Improved was 16,770 boxes.

I have for sale a fine lot of plants of above varieties. Prices: 75 cts. per 100; $5.00 per 1,000.

W. WALKER

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Elgin Co.

alone, but of twenty countries, and I have to support this view, the testimony not of one investigator alone, but of every investigator who has acquired any reputation.

SIR HORACE PLUNKETT'S OPINION

To quote but one—and I could quote no better—Sir Horace Plunkett, writing recently in the New York "Outlook," said: "The object of rural associations is not to "declare a dividend, but to improve the "conditions of the industry for the members. In the control of the management "the principle, 'One Man, One Vote,' "should be strictly observed, an essential "condition of co-operative as distinguished "from joint stock organization. The chief "advantage of co-operative legislation to "the farmer is that it enables him to do his "business in a way that suits him instead "of adopting a town-made system unsuited "to his needs."

In Canada the farmer is not permitted to do business in his own way and upon a plan that would work no hardship to him nor to anyone else; but is obliged to adopt the methods of capitalism that enable those whose interests are not necessarily in the land or in the industry, to control the organization and take what toll they please.

Maritime Possibilities*

W. H. Bunting, St. Catharines, Ont.

An important feature, peculiar to the Nova Scotia fruit belt, is the large number of apple storage warehouses situated at every shipping station throughout the Annapolis Valley. Over eighty of these have been erected with a capacity of from two thousand to ten thousand barrels each. The fruit is usually handled direct into barrels in the orchard and rushed to these warehouses, where it is repacked during the fall and winter seasons and shipped out whenever a favorable opportunity offers.

Owing to comparative nearness to the British markets, the great bulk of the surplus fruit is exported. The past season, however, has been a record one, both for volume of the crop and quality of the fruit, and has seen the western markets invaded for the first time. Nova Scotia Gravensteins and other varieties found their way not only to Winnipeg and the large prairie towns and cities, but even as far west as Revelstoke and Kamloops in British Columbia.

BETTER TRANSPORTATION NEEDED

On account of the lack of regular and frequent sailings of ocean steamships from Halifax, the transportation question during the early fall months is a serious one, and if possible some remedy should be found. This condition does not apply to the shipping facilities during the winter, when the sailings are regular and frequent. It is during this period that the great bulk of the crop is marketed, and it is therefore desirable that the planting of only the best varieties of winter fruit be encouraged.

While many Nova Scotia growers are specialists and are handling their orchards in a careful, systematic manner, a more widespread campaign for the adoption of the best methods of orchard practice would greatly enhance the quality of the product and the profit to be derived therefrom.

PRINCE EDWARD ISLAND

Prince Edward Island comprises district number eight. On this beautiful island there are a few wide-awake fruit-growers, of

*This is the balance of Mr. Bunting's report on the fruit possibilities of the Maritime Provinces as continued from the March issue.

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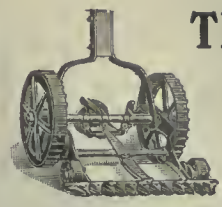

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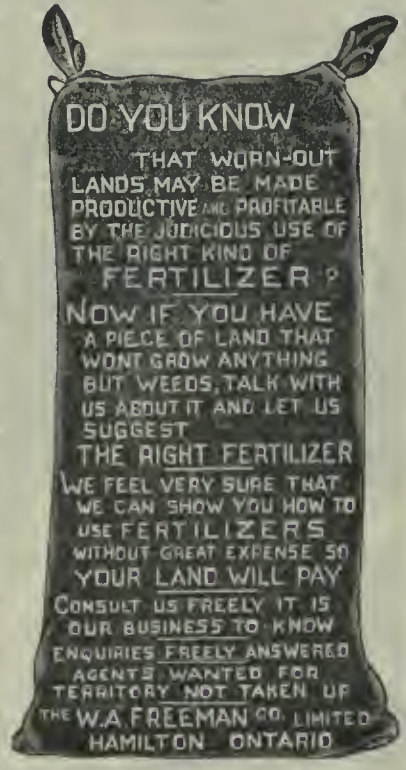

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References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.

which Mr. A. E. Dewar, of Charlottetown; Frank Bovyer, of Banbury, and John Annear, of Lower Montague, may be considered types. These men, and a few others who might be mentioned, have orchards of apples and plantations of small fruits of considerable importance. Their success proves conclusively that if the people of this district were thoroughly aroused to the splendid opportunity before them, then the increased planting of fruit would be undertaken with energy and vigor.

Complaints are made by many who have orchards that there is a lack of buyers and means of despatch for the crops already produced. It is claimed that it is useless to spend time and attention on a crop that cannot readily be turned into money. The people as a whole have not as yet become fully impressed with the fact that by a comprehensive scheme of cooperative effort, and by careful attention to the details necessary for the production of fancy fruit, they would find their product in the very greatest demand at profitable prices, and their energies would be taxed to supply it.

Small fruits of all kinds succeed admirably here, particularly strawberries, and their increased cultivation might be safely encouraged. Very active and earnest efforts to improve the situation and to awaken an enthusiasm among the people have been made by Mr. Theodore Ross, Secretary of Agriculture; Mr. A. E. Dewar, President of the Provincial Fruit Growers' Association, and Mr. Clark, Superintendent of the Experimental Farm, and it is to be hoped that their efforts will be crowned with success. A trained specialist who could devote his entire time as a field horticulturist among the people on their farms would be able to do a great deal of useful and profitable work in this province.

A Western Advantage

W. J. L. Hamilton, South Salt Spring, B. C.

I have read much about the relative merits of Ontario and British Columbia as regards fruit growing, but not knowing Ontario, I will keep out of the discussion except to point out one inestimable advantage we possess in British Columbia in having a compulsory spraying law. If only one orchard in a district is unsprayed it acts as a pest preserve, from which, as a centre, all the fruit growers' enemies are disseminated. Moths and beetles have wings, spores of the fungi can be carried long distances by the wind and by the feet of the birds and insects, and this is true also of the scale insects, both San Jose and Oystershell. It has been calculated that one San Jose scale is capable of producing at least three million descendants in one season. This alone should suggest the amount of damage done a district by one neglected orchard or even tree.

Take the codling moth: If all spray, the first brood should be reduced by about ninety-five per cent., and two more sprayings should check the next brood, another death blow being given by careful fruit thinning and banding the trees. But one infected and neglected orchard just doubles the cost of fighting this pest, since double the number of sprayings at least will be called for. Not only this, much more arsenic will be applied to the tree, which, many authorities believe, will ultimately injure it. Need I say more to show how manifestly unfair it is to all progressive orchardists for one "back number" to work such widespread injury. Moreover, this negligent orchardist will sell his inferior fruit for what he

This Washer Must Pay for Itself

A MAN tried to sell me a horse once. He said it was a fine horse and had nothing the matter with it. I wanted a fine horse. But I didn't know anything about horses much, and I didn't know the man very well either.

So I told him I wanted to try the horse for a month. He said "All right, but pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse wasn't "all right" and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse although I wanted it badly. Now this set me thinking.

You see I make Washing Machines—the "1900 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about the horse, and about the man who owned it.

But I'd never know, because they wouldn't write and tell me. You see I sell my Washing Machines by mail. I have sold over half a million that way.

So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tub full of very dirty clothes in Six minutes. I know no other machine ever invented can do that, without wearing out the clothes.

Our "1900 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it don't wear the clothes, fray the edges nor break buttons the way all other machines do.

It just drives soapy water clear through the fibres of the clothes like a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse. Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight too. Surely that is fair enough, isn't it?

Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months, in wear and tear on the clothes alone. And then it will save 50 cents to 75 cents a week over that in washwoman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 60 cents a week, send me 50 cents a week 'till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line to-day, and let me send you a book about the "1900 Gravity" Washer that washes clothes in 6 minutes.

Address me this way—

A. C. Bach, Manager 1900 Washer Co., 357½ Yonge St., Toronto, Ont.

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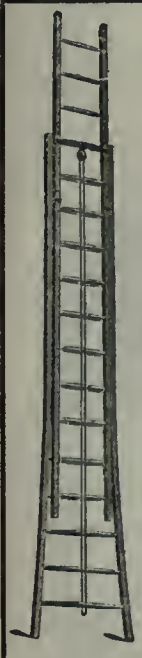

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Makers of Ladders for every conceivable purpose

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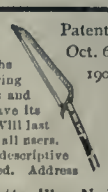


Patented Oct. 6th 1908

Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address

FRUITGROWERS' SAW CO., Scottsville, N. Y.
Representative for Ontario, Jas. E. Johnson, Simcoe, Ont.

Brooder-Hatcher

Incubators and Brooders

PHILO SYSTEM

If you would like to make some money and have some good sport at the same time, just get one of these "Brooder Hatchers," grow your own eggs and chickens in your own back yard—have them fresh every day. With this system you can keep 50 to 100 chickens in a very small place. The incubator holds 50 eggs, broods one hatch below at the same time hatches another batch above, one lamp doing double duty. One gallon of oil runs it for the 21 days. Having secured the entire Canadian Agency, with a car load of machines just arrived, we can fill all orders promptly.

Ask for Free Catalogue

THE COLLINS MFG. CO. - TORONTO

A SMALL CROP IS A WARNING

A small crop is proof that your land is run down—it is a warning to fertilize promptly.

Manure is the ideal fertilizer because it contains the very elements that crops have extracted from the soil. To get 100 per cent value from the manure you spread, you must use a good manure spreader. The pitchfork method is wasteful, entails hard, disagreeable work, and takes too much time.

When buying a spreader, be sure you get one that will last. You can make sure of the quality, efficiency and durability, by investing in one of the

I H C Spreaders

Corn King **Cloverleaf**

These spreaders are used on thousands of farms. Their strength, simplicity, and durability are matters of record. Why not look into the matter?

When investigating, remember that the power transmitting mechanism used on I H C machines is the most durable used on any line of spreaders. This results from the fact that the beater gears are held in a single casting which prevents them from springing out of alignment and cutting the teeth. The teeth are long and chisel-pointed to insure positive pulverizing of all manure. There is no wedging of manure against the beater bars. The teeth do not rim the bars. The beater is large enough in diameter so that it does not wind. You will find many other striking advantages which will convince you of I H C superiority.

Why not see the I H C local agent at once? I H C spreaders are made in different styles, in many sizes for every need. If you prefer, write nearest branch house for catalogues and full information.

CANADIAN BRANCHES—International Harvester Company of America at Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, North Battleford, Ottawa, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton.

International Harvester Company of America
Chicago (Incorporated) U S A

I H C Service Bureau

The Bureau is a clearing house for agricultural data. It aims to learn the best ways of doing things on the farm, and then distribute the information. Your individual experience may help others. Send your problems to the I H C Service Bureau.

COLLECTIONS OF OUR SPECIALTIES IN FLOWER AND VEGETABLE SEEDS

POST PAID FOR 50 CENTS EACH

Our Catalogue will interest you

FLOWER SEED SPECIALTIES, 50c

1 packet Aster, Graham's Royal Exhibition.
1 packet Dianthus, choice double mixed.
1 ounce Dwarf Nasturtium, Graham's Royal Exhibition Mixture.
1 packet Tall Nasturtium, Graham's Royal Exhibition Mixture.
1 packet Graham's Royal Exhibition Pansy
1 ounce Graham's Exhibition Sweet Peas.
1 packet Phlox Drummondii Grandiflora, choice mixed.

VEGETABLE SEED SPECIALTIES, 50c

1 pkt. Hodson Wax Bean.
1 " Lucelles Chard.
1 " Golden Bantam Corn.
1 " Witham Fireball Beet.
1 " High Grade Erfurt Cauliflower.
1 " Copenhagen Market Cabbage
1 " Improved Hanson Lettuce.
1 " New Century White Spine Cucumber.
1 " Fordhook Early Water Melon
1 " Dwarf Perfection Parsley.
1 " Delicious Squash.

PROPERLY PROTECTED POTATOES PAY

If you protect your potatoes, you get from 3 to 4 times as many from the same acreage.

The Horse-power SPRAMOTOR sprays an acre of potatoes in 15 minutes and does it thoroughly. It sprays tops and vines from 12 nozzles with a guaranteed pressure of 100 pounds. Nothing escapes the working of the SPRAMOTOR.

Made for 1 horse or two. Has a 12 gallon air tank. Automatic and hand controlled. Agitator clean-out pressure relief into tank and nozzle protector under driver's seat.

Equally efficient for field, vineyard or trees. Nozzles WILL NOT CLOG ; nothing to get out of order.

We publish FREE a valuable treatise on crop diseases. Every grower should have a copy. Send for one to-day.

AGENTS WANTED

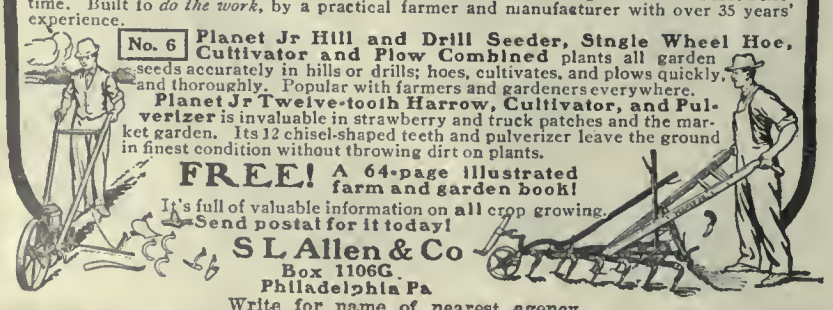
HEARD SPRAMOTOR CO., 1391 KING STREET LONDON - CANADA

Planet Jr.

This name is a guarantee all over the world of the most modern scientific farm and garden tools manufactured. Every Planet Jr

cuts your work in half

These tools double your crop yield, pay for themselves in a single season and last a lifetime. Built to *do the work*, by a practical farmer and manufacturer with over 35 years' experience.



No. 6 **Planet Jr Hill and Drill Seeder, Single Wheel Hoe, Cultivator and Plow Combined** plants all garden seeds accurately in hills or drills; hoes, cultivates, and plows quickly, and thoroughly. Popular with farmers and gardeners everywhere.

Planet Jr Twelve-tooth Harrow, Cultivator, and Pulverizer is invaluable in strawberry and truck patches and the market garden. Its 12 chisel-shaped teeth and pulverizer leave the ground in finest condition without throwing dirt on plants.

FREE! A 64-page illustrated farm and garden book!

It's full of valuable information on all crop growing. Send postal for it today!

S L Allen & Co
Box 1106G
Philadelphia Pa

Write for name of nearest agency

can get for it, thereby spoiling the market for all and lowering the high standard of fruit, which it should be the object of each district to maintain.

By all means enforce sanitation in your orchards as you do in your towns, or you will be heavily handicapped by those who do.

Speaking of sprays, with me Bordeaux mixture is a thing of the past, not only being troublesome and costly to make, but russetting the apples, especially if rain follows the spraying. Commercial lime-sulphur, one part to forty of water, is as good a fungicide, and does no injury to the fruit, whilst the addition of two pounds lead arsenate to every forty gallons doubles its power as a fungicide besides forming a powerful insecticide. Applied hot, with ten pounds of quicklime to the barrel, it is still further improved.

British Apple Market

The Canadian High Commissioner in Great Britain, discussing British apple markets in the weekly report of the Department of Trade and Commerce, has the following to say:

The reports recently appearing in the newspapers that a million barrels of apples have been received in the United Kingdom this season from Nova Scotia, appear to be substantially correct, and it is estimated that another 300,000 or 400,000 barrels remain to be shipped. The condition of those already received has not been uniformly good, the keeping qualities having been below the average, owing, it is thought, to the fruit having ripened too quickly. The huge quantity, combined with the disappointing quality, has had an adverse effect on prices.

A member of a well-known firm in the trade states that, although the number of barrels received was so great, he had not heard of one which had been branded "falsely marked," but he had had one very bad instance of fraudulent packing and had heard of several others. A new feature will be introduced into the trade very shortly by the arrival of six thousand cases of apples from Cape Colony, but these will not compete with Canadian, but with Australian fruit.

SCIENTIFIC LINES

It is become more evident each year that apple growing on scientific lines is making progress in this country, and that the efforts which have been made for a number of years to bring about an improvement in the apple orchards here are meeting with success. The better kinds of apples are being planted, the varieties are being limited, and the numbers are such that the produce can be marketed in commercial quantities; the trees are being sprayed and the orchards cultivated, and the practice of grading and careful packing in boxes is being greatly extended.

The development has been such and promises so well, that a leading firm with branches at all the principal ports, and hitherto engaged in the import trade only, has been compelled to start a department to deal with English fruit. They express the opinion that it will not compete with the Canadian product, but if the movement grows, as it has every appearance of doing, it is difficult to see why the late native apples will not influence the market for the earlier Canadian importations, especially if the latter are not of very good quality. As the improvement in the English apple is likely to raise the quality standard of the demand generally, the necessity will be per-

TIME TO BUY YOUR

Gladioli

For early bloom plant your Gladioli just as soon as the ground and season are fit.

Have your bulbs ready by ordering now.

TRY THE

Imperial Two Dollar Collection

One Bulb each of Peace, La Luna, Dawn, Blue Jay, Victory, and Faust. Six of the best Gladioli ever introduced—the cream of thousands of varieties of Gladioli. Post paid **$2.00.**

The Dollar Collection

Six varieties, covering a range of colors from white and violet to dark, rich red. Post paid **$1.00.**

Superb mixed, including the largest number of the most magnificent varieties of any popular mixture of commerce; size 1¼ inch. **50 for $1.10** (mail prepaid).

The Best Dahlias

20 Varieties—**$1.00** (prepaid).

CATALOGUE

H. P. Van Wagner

Stoney Creek, Ont.

You Need This Catalogue.

The ONTARIO FRUIT SPRAYER

BUILT FOR BUSINESS

Fig. 73 No. 1 A, 1912 Model

This cut illustrates our **1912 MODEL FRUIT SPRAYER,** a marvel of simplicity, strength and durability, 2½ H. P. engine, water cooled and always ready; can be quickly cut off from pump jack and used for other purposes. This outfit represents all that first-class machinery, material and skill can produce at a moderate price. Write for detailed description and price. We manufacture a full line of Apple Evaporating Machinery.

Installing Power Evaporators a Specialty

FRUIT MACHINERY CO. - Ingersoll, Ont.

Potash for Orchards

Photo taken in Orchard of J. Elliott Smith

The fruit growers of the famous Annapolis Valley realize the importance of Potash in producing large yields of excellent quality.

The system employed by them in maintaining soil fertility is an admirable one and ensures large yields every season. Annual applications of 200 to 400 lbs. Muriate of Potash and 400 to 800 lbs. Bone Meal per acre are given and in a few instances the applications exceed these quantities.

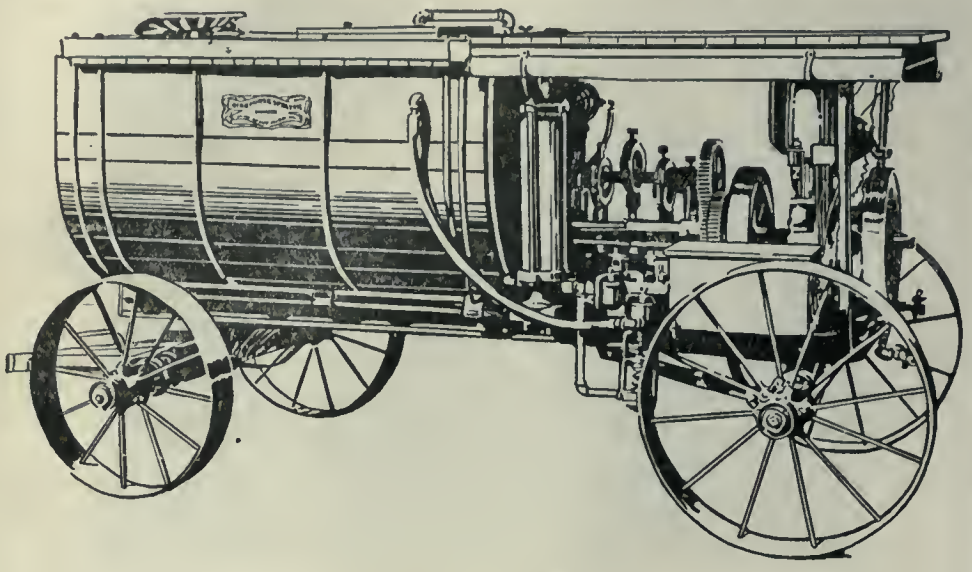
The humus and nitrogen are obtained by growing and plowing down a crop of Red Clover every year. During the early summer, thorough cultivation is given, chiefly with a view to conserving soil moisture.

Write us for FREE copies of our bulletins, including "FERTILIZING ORCHARD AND GARDEN."

THE GERMAN POTASH SYNDICATE

1102-1106 I.O.F. Temple Building, Toronto

Power Sprayers



Giant Power Outfit

GIANT POWER OUTFIT.—This is a three-cylinder pump of great strength, power and capacity. It will spray 9 gallons per minute at 300 lbs. pressure, if desired. It can be operated with either a 2½ or 3½ H.P. Engine.

NIAGARA POWER OUTFIT.—A three-cylinder pump of slightly less capacity, but the same high pressure. Can be operated with a 2½ or 3½ H.P. Engine.

DUPLEX POWER OUTFIT.—A two-cylinder pump, medium priced, but with large capacity and high pressure. Operated with either a 1½ or 2½ H.P. Engine.

All our pumps have porcelain-lined cylinders, so are proof against corrosion. These cylinders are guaranteed for 10 years.

These pumps are very strong, very simple, and built for large capacity and high pressure.

All parts are interchangeable. Repairs cost practically nothing. Every part fits every other, and they can be immediately supplied.

All our power outfits are mounted on steel frames, which can be attached to any wagon.

They are equipped with 150 and 200-gallon tanks with rotary agitator.

Tank Filler, which works by pressure, and will fill the tank in 6 to 8 minutes.

Steel folding tower. By removing one tail nut this tower folds flat on the outfit.

The highest grade of hose. Guaranteed to stand 300 lbs. pressure during the entire season.

Spray Rods—lined with large sized aluminum tubing.

Latest approved nozzles and other accessories.

We have hundreds of power outfits working in Ontario, and wherever we have a power outfit, we have a satisfied customer.

We have great confidence in these pumps and want to demonstrate them to you.

We will pay the expenses to our factory of any fruit grower in Ontario who intends to purchase a power outfit, and who will inspect our pumps before he places his order. He will be under no obligation to purchase from us. All we ask is that he purchase a power outfit of some kind.

HAND PUMPS: MAGIC No. 9, is the largest hand pump made. One man can easily maintain a pressure of 140 lbs.

LITTLE GIANT No. 70—Most powerful barrel sprayer on the market.

THE PIPPIN No. 50 is a strong barrel pump, made for smaller orchards.

Write for our complete illustrated catalogue.

Be sure and see these pumps before placing your order.

They are made with all troubles left out.

NIAGARA BRAND SPRAY CO., Limited

Burlington, Ontario

ceived for continued watchfulness and effort on the part of Canadian growers. As further evidence of the headway which is being made, the report may be mentioned that considerable quantities of English apples have been exported to South America.

Niagara District Notes

The Niagara Peninsula Fruit Growers' Association conducted a very successful institute during March. Among the prominent speakers were Secretary C. E. Bassett, of the Michigan State Horticultural Society; Dr. Gussow, of the Experimental Farm, Ottawa, and Prof. J. W. Crow, and Prof. L. Caesar, of the Guelph Agricultural College. Both Mr. Bassett and Dr. Gussow spoke against the practice followed by nurserymen of "heeling in" nursery stock in cellars during the winter months. Dr. Gussow claimed that both little peach and yellows are constitutional diseases that cannot be eradicated by spraying. All that can be done is to destroy affected trees.

Prof. Caesar pointed out that these diseases are not new, although they are new in this district. The yellows were identified near Philadelphia in 1791 while the little peach has been known for some thirty years. It has been known in the Niagara District for about ten years. The causes of these diseases are still unknown. There is no use, he claimed, trying to save affected trees so the sooner they are removed the better. The diseases are spread by budding from diseased trees and by the proximity of diseased and good orchards.

Mr. Robt. Smith, of Michigan, dealt with tomato and melon culture.

Mr. Robt. Thompson advised our fruit growers to hold on to their fruit lands as there is no danger of their value declining and money can be made by working them.

A feature of the meetings was a banquet tendered to the Hon. Martin Burrell, Dominion Minister of Agriculture, who formerly owned a fruit farm near St. Catharines.

The Pelham Co-operative Association, composed of farmers and fruit-growers, have completed organization and elected the following officers: President, J. E. Lent; Vice-President, J. Hampton; Secretary, J. Asberry; Directors—A. Ranton, Ed. Clemens, C. Howe and C. Brown. An experienced person will be engaged as manager and treasurer.

British Columbia

The annual report of Mr. J. C. Metcalfe, the markets commissioner for British Columbia, has been submitted to the Provincial Minister of Agriculture. Mr. Metcalfe warns our growers that if we expect to command the trade of the Prairie Provinces to any great extent we must plant larger areas and increase our output as rapidly as possible. One firm of United States shippers sold more fruit in the Prairie markets in 1910 than double the output of British Columbia for 1911.

The planting of peaches is discouraged by Mr. Metcalfe because peaches ripen late with us, and the markets, therefore, are supplied before our peaches are ready. We are advised to grow something with less risk and more certain profit. Our growers are told to fill all orders as agreed upon as regards date of shipping and varieties ordered, and to extend the methods of co-operative packing in every way possible. In his capacity as markets commissioner Mr. Metcalfe has performed work and gathered information of great value for our growers.

Some History
about *Typewriters*

Modern and Ancient

CHAPTER 9

A FEW years ago typewriters were used almost entirely for letter writing. It is different to-day. Their field of usefulness has increased many fold.

THE Underwood introduced typewriter book-keeping, and the application of the typewriter to many special recording purposes.

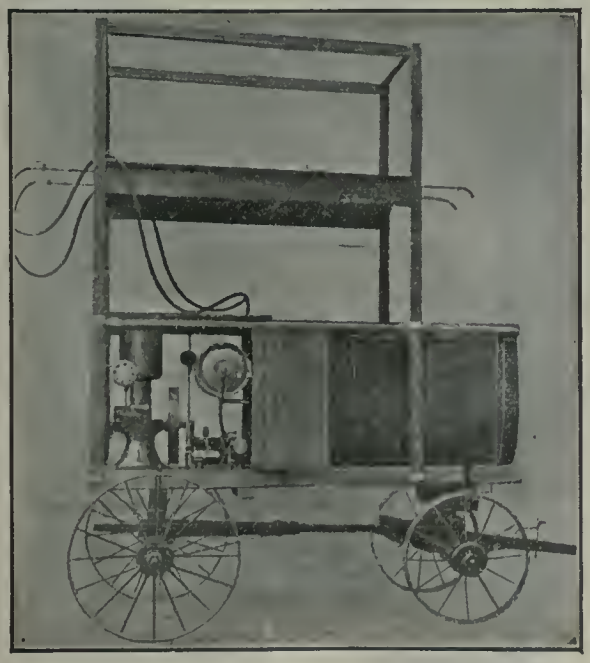
THERE are over a score of special models of the Underwood for special uses.

MANY firms use four times as many Underwoods for accounting work as they use for correspondence.

THE modern office uses Underwood systems—billing systems, order systems, bill and charge systems, etc., planned for their particular needs.

THE Underwood Condensed Biller will reduce your billing costs 50 per cent.

United Typewriter Co.
Limited
TORONTO



This Model C. Spramotor was awarded four Gold Medals, two at National Horticultural Congress, one at Dominion Exhibition, St. John, and one at Provincial Exhibition, Halifax, N. S., 1909-1910. "There are reasons."

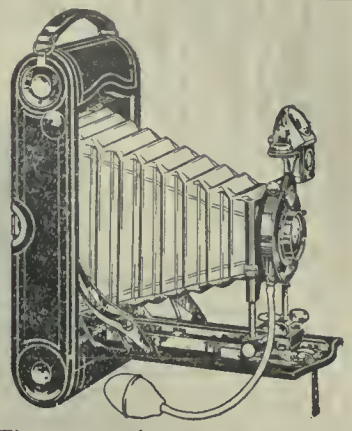
Geo. E. Fisher, of Burlington, who is using a power Spramotor, writes about the latest Model C:

"Replying to your favor re the behavior of the Gasoline Power Spramotor: This season I may say the machine has worked well all the way through. It has made a record for the Spramotor Co. We have a big lot of trees and these were all sprayed from one side before the buds opened. We found that we can spray about 1,000 bearing apple or 4,000 bearing pears on one side per day in good weather. There has been no delay."

We have been manufacturing Spramotors for 15 years for spraying purposes only. "That is the reason." Particulars free.

HEARD SPRAMOTOR CO. - 1390 King Street, LONDON, ONT.

If it isn't an Eastman, it isn't a Kodak.



The convenience and simplicity of the

KODAK

as compared with a plate camera would make it worth while even if the pictures were no better—*but they are.*

Kodaks load and unload in daylight with film cartridges that weigh ounces where glass plates weigh pounds.

Kodak Films are superior to plates for hand camera work, not merely because they are light and non-breakable, but also because, chemically they are made to exactly meet the harsh lighting conditions which the amateur encounters.

By the Kodak system no darkroom is required for any part of the work, not even for developing as anybody can, without previous experience, develop films perfectly with a Kodak Film Tank, and get better negatives than are possible by the old darkroom method.

The Kodak system gives the amateur the widest possible latitude in the finishing of his pictures: He may use the daylight tank system, the dark room method or mail his films to some professional finisher. It's just as he chooses.

Kodaks $5.00 and up. Catalogue free at the dealers or by mail.

CANADIAN KODAK CO., LIMITED
TORONTO, CAN.

Strawberry Plants
FOR SALE

Choice Plants at reasonable prices. We have Early Ozark, Fendall, Barrymore, Silver Coin, Pocomoke, Aroma, etc., of newer varieties.

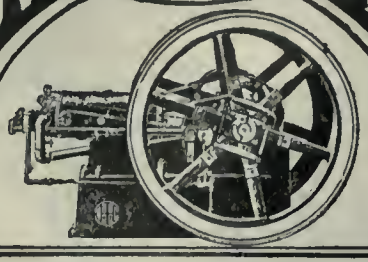
We also have Dunlop, Williams, Warfield, Brandy Wine, Bederwood, William Belt, Glen Mary, etc., of the old favorites.

Our free list tells all about them.

Order early as plants are scarce.

Ontario Nursery Co.
Wellington, Ont.

GO SLOW AND BE SURE



It's wise to decide that you need an engine. But don't spoil your good intentions by buying a cheap one. Don't be blinded by a low price or by wild claims. Go slow and be sure. Buy an engine that has proved its worth, from a concern that has proved its integrity. You can't afford to make a mistake—it's much costlier than the price of an engine.

I H C Gasoline Engines

are in use on thousands of farms throughout the country, running the many farm machines, such as the cream separator, churn, feed grinder, pump, fanning mill, thresher, washing machine, electric light plant, etc. They guarantee you reliable power for every requirement at a surprisingly small cost.

I H C gasoline engines are marvels of simplicity, strength, economy, reliability, and durability. They run steadily and smoothly, year in and year out. They make and save money every time they are used, and if, by accident, you should need repairs, you can get them promptly with little trouble or delay from the I H C dealer in your locality.

Don't you think it would pay you to investigate an I H C engine before you buy any? They are made in so many sizes and styles that you can select just the right size and style for your work: Vertical type—2, 3, 25, and 35-H. P.; horizontal—1 to 50-H. P.; semi-portable—1 to 8-H. P.; portable—1 to 25-H. P.; traction—12 to 45-H. P.; sawing, pumping, spraying, grinding outfits, etc. Built to operate on gas, gasoline, kerosene, distillate, or alcohol—air-cooled or water-cooled. Ask the I H C local dealer for catalogue and all information, or, if you prefer, write nearest branch house.

CANADIAN BRANCHES: International Harvester Company of America at Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, North Battleford, Ottawa, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
CHICAGO (Incorporated) U S A

I H C Service Bureau

The purpose of this Bureau is to furnish farmers with information on better farming. If you have any worthy question concerning soils, crops, pests, fertilizers, etc., write to the I H C Service Bureau and learn what our experts and others have found out concerning these subjects.

IF YOU

are at all interested in

Home-Mixed Fertilizers

I would like to send you my book on the subject. It contains full information, formulas and lots of information to farmers who want to get the most and the best for their money. The book will be sent free upon request by post card from you.

Dr. WM. S. MYERS, Director of Propaganda
17 MADISON AVENUE, NEW YORK
No Branch Offices

Vegetable Growers are Active

In his annual report as the secretary treasurer of the Ontario Vegetable Growers' Association, Mr. J. Lockie Wilson, of Toronto, stated at the recent convention in Toronto, that the spirit of cooperative effort is spreading rapidly among the members of the different branches of the association. Many hundreds of dollars have been saved through the work of energetic officials in getting in touch with wholesale manufacturers and dealers, thus cutting out the profits which formerly went to middlemen. The Ottawa branch last year purchased three carloads of baskets and boxes, and the St. Thomas' branch, with seventy-four members, secured greatly reduced prices on the following supplies: Two hundred thousand berry crates, boxes and fruit baskets; eight hundred and seventy-five pounds of Paris Green; three thousand pounds ground sulphur; seventy-three barrels lime sulphur solution; one thousand three hundred and fifty pounds blue stone; one thousand eight hundred and fifty pounds arsenate of lead; one car salt; one car land plaster; one car cement; five hundred rods wire fencing; two thousand eight hundred pounds straight wire; two and a quarter tons binder twine; sixteen thousand pounds fertilizer; twenty bushels seed grain, and twenty-eight pounds seeds. Many of the branches had held monthly meetings during the year, some in the gardens of the leading vegetable growers in the district. One society saved two hundred dollars on the purchase of berry boxes and baskets alone. Tenders were called for, and the lowest accepted.

The Ottawa branch received grants of from twenty to fifty dollars from four different municipalities in the immediate vicinity. The directors of this branch put up a splendid exhibit of the products of their gardens at the Central Canada Exhibition, which proved a valuable advertisement for the association in that section. At the close of the exhibition the whole exhibit was donated to the city hospitals. This generous action of the officers of this branch was so much appreciated by the citizens that the use of the Assembly Hall in the Carnegie Buildings in Ottawa was given to them free of charge. Mr. Wilson is of the opinion that there is no better method of advertising the association than by having a combined exhibit at the Canadian National, the Central Canada, and the Western Exhibitions.

LACK OF LABOR

One of the chief drawbacks to the progress of the vegetable growers in this province is the lack of efficient labor. From every section comes the cry, "We cannot get a sufficient number of men, not even of an inferior class." The officers of the St. Thomas branch state that in their neighborhood, in the county of Elgin alone, there is a shortage of one thousand laborers, and complaints have been made as to the unsatisfactory class of immigrant labor that is available.

The Brantford branch has more than doubled its membership by offering prizes to the members who secure the largest number of new ones. The Sarnia branch have specialized with early potatoes, and found them exceedingly profitable.

NEW ONTARIO POTATOES

The potatoes grown in New Ontario continue to meet with the highest praise from consumers who have had an opportunity of testing them. With much splendid potato land available in Ontario, Mr. Wilson regretted that tens of thousands of bushels are still being imported into the province from New Brunswick and several of the American states. It is said by those who are in

Bruce's Flowering Bulbs

GLADIOLUS

Choice Mixed, 10 for 25c; 25 for 60c: $2.00 per 100, post paid.
Croff's Hybrid Seedlings, mixed, 10 for 30c; 25 for 60c; $2.00 per 100, post paid.
Bruce's White and Light Shades, 10 for 40c; 25 for 85c; $3.00 per 100 post paid.
Childsi, Mixed, 10 for 50c; 25 for $1.00; $3.75 per 100, post paid.
Bruce's Superb, mixed, made up by ourselves from all varieties, the best, 10 for 60c; 25 for $1.25; $4.50 per 100, post paid.
Croff's World's Fair Collection. Novelties in all colors, grand, 11c each; 10 for $1.00; 25 for $2.25, post paid.
New Grand Named Varieties, almost any color, 24 sorts, 20c each; 24 for $3.75 post paid.

DAHLIAS

Splendid named sorts, all colors, Show. Cactus and Pompon Varieties, 22c each; $2.20 per dozen, post paid. Ordinary varieties, mixed, 12c each; $1.20 per dozen, post paid.

TUBEROSE

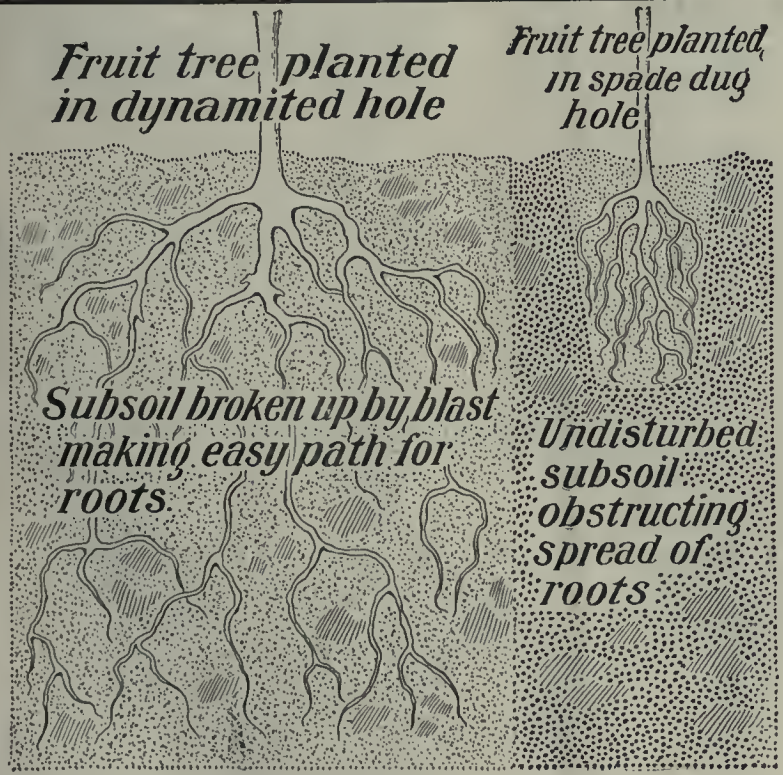
The Pearl, double white flowers. each 5c; per dozen, 40c; per 100, $2.50, post paid.
Single Orange Scented, beautiful orange-like blossoms,each 5c; dozen 50c; 100, $3.50 post paid.

LILIES

Auratum, Lancif, Album and Rubrum, Elegans, Pardalinum, Tigrinum, Umbellatum, Tenuifolium and Wallacei, each 20c; per dozen, $1.80, post paid.

FREE Write for our handsomely illustrated 112 page Catalogue of Vegetable, Farm and Flower Seeds, Bulbs, Plants, Poultry Supplies, Garden Implements, etc., now ready

JOHN A. BRUCE & CO., Ltd. Seed Merchants Established 1850 **Hamilton, Ont.**



A tree planted by means of

Stumping Powders

not only thrives much better than a tree that is planted in another way, but also will produce larger crops. You can plant double the number in the same time for a much less expense.

Write us for **Free Pamphlet** on the use of

BING CHERRY TREE SET IN SPADED HOLE

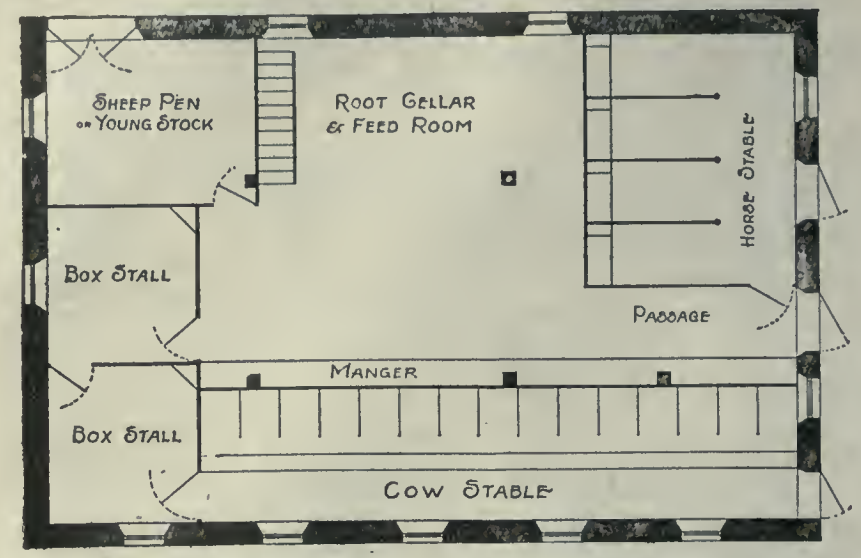
C. X. L. Stumping Powders

Used as well for removing Stumps and Boulders, Digging Wells and Ditches, Breaking Hardpan and Subsoils, Rejuvenating Orchards, etc., etc.

Manufactured by

CANADIAN EXPLOSIVES Limited MONTREAL Que.

BING CHERRY TREE SET IN DYNAMITED HOLE



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CANADIAN HORTICULTURIST Paper

201

a position to know whereof they speak that the finest potatoes grown on this continent can be produced on the Ontario Government's practically free grant lands in New Ontario, and as high as two hundred bushels per acre have been grown in the northland and a ready home market is found for this product among the miners in the gold, silver, copper and nickle mines which have made Ontario famous. At the present time the market price of potatoes in the mining district is one dollar a bushel. Thus a farmer in New Ontario can produce, without any scientific knowledge of farming, at the lowest possible calculation, one hundred bushels an acre, giving him for the product of ten acres of land one thousand dollars for this crop alone.

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The executive held eleven meetings during the year, and the directors two. The president and Mr. F. F. Reeves were delegates to Boston and Brockton conventions respectively.

Items of Interest

The Division of Entomology of the Central Experimental Farm, Ottawa, has issued a new bulletin dealing with the Destructive Insect and Pest Act, including recent amendments.

"The Weeds of Ontario" by J. E. Howitt, lecturer in botany of the Ontario Agricultural College, is the title of bulletin No. 188, issued by the Ontario Department of Agriculture. It is a revision and amplification of several previous bulletins issued by the Department. It contains one hundred and forty-four pages and deals at considerable length with the most common weeds of Ontario, most of which are illustrated.

The annual meeting of the shareholders of The Horticultural Publishing Company, Limited, was held in Toronto February 29th. The report of the auditor showed that the receipts of the company from its two publications, THE CANADIAN HORTICULTURIST and THE CANADIAN FLORIST, during 1911 were the greatest in the history of the company. The surplus of receipts over expenditures, as reported in the auditor's statement, was voted by the directors into a reserve fund. The making of important improvements in THE CANADIAN HORTICULTURIST, as recommended by the managing director, was considered and referred to the board of directors to be dealt with at their discretion. The following directors were elected: Messrs W. H. Bunting, St. Catharines; J. H. Simmers, John H. Dunlop and P. W. Hodgetts, Toronto; Harold Jones, Maitland; A. W. Peart, Burlington, and H. B. Cowan, Peterboro. At a subsequent meeting of the board of directors, Mr. W. H. Bunting was re-elected president, Mr. John H. Dunlop first vice-president, and Mr. H. B. Cowan, secretary-treasurer and managing director.

Send us the names of a few of your friends who are interested in horticulture. They will like to learn about THE CANADIAN HORTICULTURIST.

The Canadian Horticulturist

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(Photo Copyrighted by C. H. E. Hudson, Kelowna)

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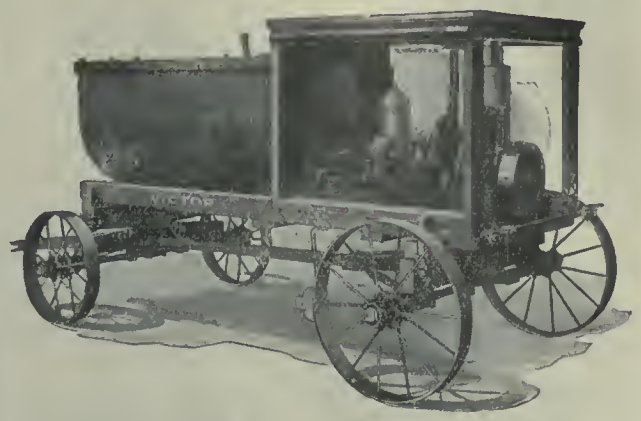

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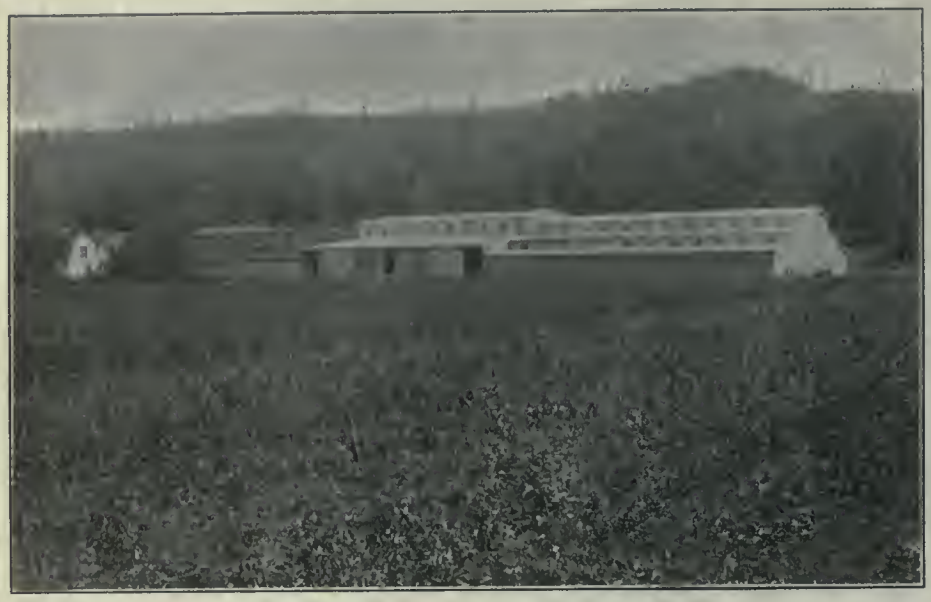

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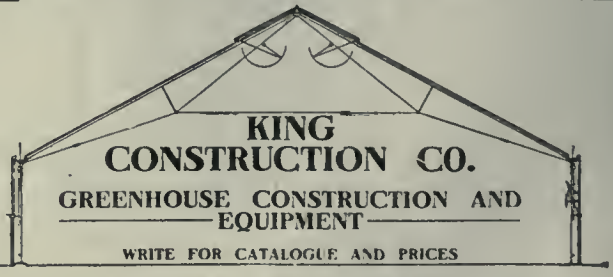

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The Canadian Horticulturist

Vol. XXXV MAY, 1912 No. 5

How Shall I Prune?

Prof. E. M. Straight, MacDonald College, Que.

HOW shall I prune? The question has been asked over and over again, and answered as many times; but seldom answered twice in the same way. The great amount of perplexing detail, and the mixing of different pruning systems have led to such a confusion in pruning practice that many growers do not prune. Other would-be experts attack trees as if they thought that some "cussedness" existed somewhere within the tree and that it must be got rid of by means of the saw and the pruning shears, and so they cut and saw. They could do the work with eyes closed, and do it just as well. This reckless pruning and its dismal failure have forced other men to abandon all pruning endeavour and so the trees grow as best they may.

An upright grower. Should have been headed back.

The first important thing for the grower to do is to form an ideal. By that I mean, let him choose that system of pruning which suits him best and stand by it. After having started off in any one direction he cannot afford to change to any other. Two leading systems are recognized, one being the open-headed and the other the centre-shoot system. They both have their advantages and disadvantages. Personally, I prefer the open-headed system; hence this article will treat on that system only. If the grower favors some other method and intends to follow that, he should not read this article, for it will only lead to confusion.

When you receive your trees from the nursery, it is evident that they have much less root than they had when growing there. Every care may have been exercised in the digging, yet the greater part of the roots are left in the ground, and it is better so. While the young tree was in the nursery row a balance existed between the root system and the top of the tree—both increased together; but when the root area was shortened in digging we must shorten the part above ground to maintain the balance. Many growers take off all branches, leaving nothing but a whip. This is not necessary and not wise. Figure number one shows how the root growth is affected by transplanting.

A short trunk and open centre. Pruning to outside laterals would have produced a better shaped head.

If a few desirable branches are left the young tree may be started off in the way it should go, better then than at other times. These branches should not be numerous and should be shortened. It is important to remember that the pruning of the top should be somewhat more severe than has been the pruning of the roots, because the demand for water which is made by the growing parts cannot be so successfully met by a newly transplanted tree as by one thoroughly established. I am not in favor of much root pruning. All mangled roots should be removed and all broken roots cut back into fresh tissue, as new roots arise more readily from clean cut surfaces.

THE HEIGHT OF PRUNE

The locality in which you live will determine to a large extent the height of the first branch from the ground. The tendency among growers is to get the head nearer and nearer the ground; and there are many advantages arising from this system; but we must not fail to count the cost. In Quebec and the Maritime Provinces, where the snowfall is heavy, if the head is very low down you will lose it entirely. I have seen trees two years after planting stripped to a whip as the snow subsided in the spring. I think it is not safe to form a head lower than thirty inches in these provinces.

Not a bad type. It needs some thinning.

Fig. 1—This Shows How Roots Are Cut at Digging Time

Branches should be arranged about the main stem or axis of the tree, so that eventually they may occupy the whole space and provide for its symmetrical development. If three branches are wanted they should be so arranged that, if looking down from the top, these branches would form three angles very similar to each other. More than that these branches should arise one above the other. Such a tree is not liable to injury from snow or wind; and the union between branch and stem is more stable when arising one above the other, than it would be if all branches arose from the same place. By referring to figure two all this will be clear. By cutting the leader, near the topmost branch, we at once provide for an open centre and start the tree off according to our ideal.

It may be regarded as a rule that when a limb is cut back, unless the cut is made just above a strong lateral, two or more branches will develop into shoots. Two or three of these shoots are allowed to grow on each of the previous year's limbs to form an additional framework for the tree. These shoots should be selected as before, one near the end and the other two farther back, so that the development of crotches will be impossible. These shoots are again shortened as in figure three, and not more than two allowed to develop from each the next year.

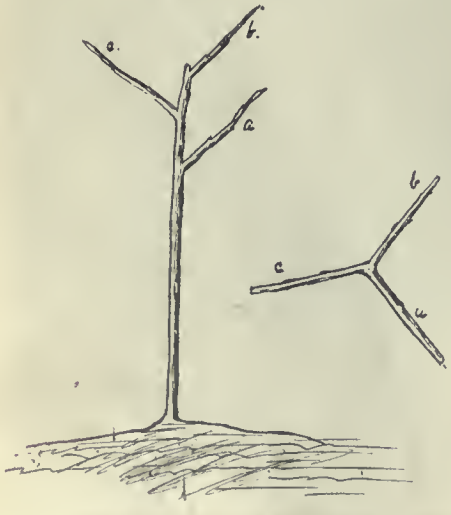


Fig. 2—The Tree at Planting Time

THE FRAMEWORK

The framework of the tree should now be well formed and will require less attention from this time on. Keep in mind your open centre. Take out all branches which would interfere with your plan. Remove all surplus branches and all which rub, cross, or tend to form crotches. The reason for all this is quite evident upon a moment's reflection. The tree is not concerned with the production of fruit, but with the reproduction of the species. It is this towards which plants bend their every endeavor. The size and quality of the fruit are of no moment, but the number of seeds is of great importance from the standpoint of the tree. Bearing this in mind we see why two apples are borne on a branch where there should be one from the grower's viewpoint, and why both are small and unmarketable.

Fig. 3—Plan of Tree After One Year's Growth.

To get first-class fruit it is often necessary to thin, but the process is slow and costly. We are beginning to find that it pays better to thin the tree and the fruit often takes care of itself. When branches rub each other canker like swellings are often produced, and the inner tissue always laid open to the entrance of spores of plant disease.

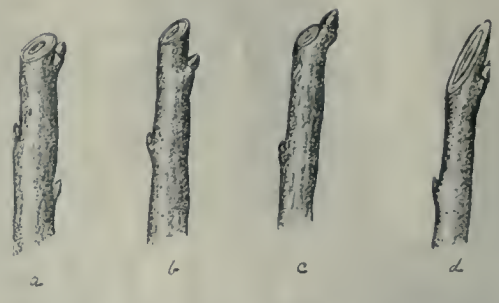


Fig. 4—'A' Shows the Correct Way of Cutting Off a Shoot and 'B,' 'C' and 'D' Wroog Ways.

If the pruning involves the removal of annual growth the branches should be cut just above a bud. If this is done the wound heals readily without paint or covering of any kind. If made below a bud the stub dies back to the bud—unsightly to say the least—and provides a means of access for various fungoid pests. Figure four shows how the shoots should be cut.

REMOVING LARGE BRANCHES

If growers have exercised the care outlined, the removal of large branches is seldom necessary. It is not reasonable to expect that this will always be done, so that the removal of large branches is a problem which always confronts the grower. I know of one grower who always cuts these large fellows about one foot from the main stem. He found these convenient in climbing the trees, he said, as it obviated the necessity of a step ladder. These leafless and branchless stumps have no life in themselves. The only chance for this stub to be healed in is from the activities of the trunk and this is so far removed from the end of the stump that the healing is seldom witnessed by the man who made the wound. Neither should the cut be made at right angles to the branch, but should conform to the tree trunk. The wound is thus larger, but all parts are in intimate relation with the trunk which supplies the

Improper Pruning. A Long Stub

6—The Progress of Decay Due to a Long Stub Being Left.

materials to be used in covering the exposed surface.

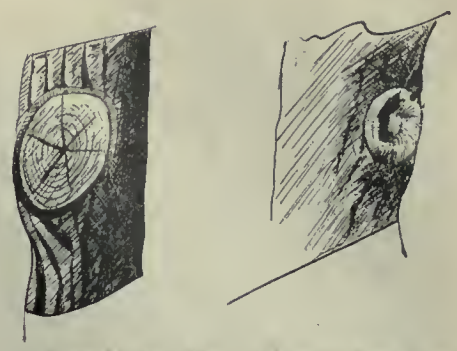
The reckless making of wounds does not end in unsightliness. The dead stub carries the decay deeper and deeper into the tissue, until the tree has a decayed heart, which is usually the beginning of

Wrong and Proper Methods of Cutting Off a Large Limb

the end. This is shown in the illustrations as well as the proper method of making a wound and how nature covers it. If the branch is very heavy it may be necessary to cut it some way from the trunk, and after the weight is removed to cut a second time as it should be, as shown in figure five. If this is not done a ragged wound is induced, which carries the split tissue into the tree trunk and healing is very slow. The cut surface, if at all large, should be covered by thick paint or grafting wax. Paint is to be preferred. It sticks well, keeps out the water and prevents the entrance of disease.

TIME TO PRUNE

When to prune is still a debatable question. Some growers hold that late spring pruning tends to increase the fruit supply and that fall or early winter pruning increases the development of wood. I really don't know. Other growers say, "Prune when your knife is sharp." This is better than no pruning, but it lacks system and is seldom satisfactory. For commercial work the pruning must be done at some particular season and carried on in a systematic manner after some



5—A Wound Properly Made. A Properly Made Wound Nearly Healed.

definite plan. I am satisfied that spring pruning is more generally followed than any other. Late winter pruning is satisfactory for some trees, and usually the grower has more time during that season while summer "pinching" or "stopping" has its place.

Refrigeration in Relation to Fruit Growing

Dairy and Cold Storage Commissioner, J. A. Ruddick, Ottawa

THE manner in which packages are stowed in an iced car is of the greatest importance in securing best results. The full benefit of the iced car is lost unless there is provision for a free circulation of air from the ice bunkers and among the packages. Refrigerator cars are very often loaded so that there is little or no circulation of air, and in such a car the temperature will be uneven and much higher than it should be. This is one thing about which a great deal has yet to be learned by the average fruit shipper in this country.

There is rather a common impression that the ice adds moisture to the air in a car, but that is not necessarily so. If there is a good air circulation under and between the packages the air will be drier than it would be if there was no ice in the car. The moisture is carried by the circulation air to the ice bunker and deposited on the cold surface of the ice.

Peaches, plums and other soft fruits are not susceptible of being preserved

*Extract from a paper read at the recent Dominion Fruit Conference in Ottawa.

Apple Trees in Bloom in the Largest Apple Orchard in Ontario. There are Rows of Trees a Mile Long

The apple orchard of W. H. Gibson, of Newcastle, Ont., is here shown in part. The trees are thirty-two feet apart. The apples from these trees graded eighty per cent number one. Mr. Gibson obtains better colored fruit on clay loam by leaving a strip of grass mulch, twelve feet wide under the trees and cultivating the center between the rows.

for any length of time in cold storage. The best that can be done is to keep them in a firm condition for transportation and marketing at reasonable distances. The refrigerator car is good as far as it goes, but it is weak when depended on for prompt cooling. The proportion of ice to the contents of a full car is necessarily very small, and when a car is filled with warm fruit, it takes too long to reduce the temperature. This is all the more noticeable if the car itself has not been chilled before the fruit is loaded.

A temperature of forty degrees may be considered about the minimum possible temperature in a refrigerator car in warm weather, but it seldom goes below forty-four or forty-six unless the heat is out of the fruit before it is loaded. If the fruit is warm when loaded into the car, it will take from two to three days to bring the temperature down and the car will have to be kept well iced in the meantime. All this time the ripening process is proceeding rapidly.

If any plan can be devised whereby the chilling of the fruit can be accomplished in a few hours instead of taking days, the fruit will carry much farther and in better condition. There is this further advantage that fruit which is to be promptly cooled after picking can be safely allowed to remain longer on the tree and thus reach a fuller development of its quality. The day is coming when the matter of quality will be more highly appreciated. Just now a great deal of emphasis is given, and I think justly so, to questions of appearance, packing and packages, but there will be more uniformity in this respect as time goes on and the other matter will come more to the front.

PRE-COOLING

The adoption of pre-cooling on a large scale has been confined almost entirely to the Pacific slope in the United States. The conditions under which this system has been developed, especially in California, find no exact parallel in Canada, yet I am inclined to think that there is a limited scope for the operation of such plants in this country. The Niagara District probably offers the best opportunity for successful operation.

Pre-cooling may be carried out either by placing the fruit in a cold storage warehouse or by having it cooled in the car after it is loaded for shipment. It is the latter method which is attracting most attention as being the more practicable of the two. There is, however, no difference in principle and the system of car-cooling is favored largely because it saves time and the extra handling of the fruit in and out of the warehouse.

The cooling of a car may be completed with a well equipped and properly designed plant in about four or five hours.

(Continued next month)

What Cultivation Shall I Give My Orchard ?

T. G. Bunting Central Experimental Farm, Ottawa

NO phase of orchard management is of more importance than orchard cultivation, and yet many growers do not give it the attention that they give to spraying, pruning and handling of the fruit. We cultivate our orchards for three main reasons, under which all the benefits derived from cultivation may be said to come, and these reasons are: First, cultivation aids in bringing the unavailable plant food in the soil into a form available to the plants; second, cultivation conserves the soil moisture; and third, cultivation keeps down the weeds.

It is well to have a thorough understanding as to why we cultivate our orchards, and as the reasons have been enumerated it will be desirable to consider them carefully before making any recommendations. It is generally known that soil suitable for orchard planting contains an abundance of plant food. That is, the chief essential elements, such as nitrogen, phosphoric acid, and potash are in most soils in sufficient quantities to last a long time, provided it all could be made use of by the tree. The greater part of this plant food is in a form that cannot be made use of by the trees until it has been made available by the chemical and bacterial action which is going on in the soil.

IMPORTANT CONDITIONS

These two actions, which should be continually going on, when the ground is not frozen, are largely aided by a suitable temperature, an abundant supply of air and a plentiful supply of water, without an excess of water. Therefore, we must supply as far as possible the conditions suitable for the most rapid reactions in the soil. This is done, firstly, by giving good drainage, which in removing the surplus water from the soil allows the soil to warm up much more quickly than it otherwise would, as water requires more heat to warm it up to a given temperature than does the soil; secondly, by cultivation which loosens up the soil and tends to assist in warming it up as there then being better aeration the air will impart its heat to the soil; and thirdly, the soil being better aerated the bacteria can secure the required amount of air, including nitrogen.

Now as cultivation cannot be given until the soil is dry enough it is necessary that the soil should be sufficiently well drained to permit of the cultivation being given at a time when it is desired that these reactions take place most rapidly in the soil. When is this most necessary? If we consider the needs and habits of the tree it will give us a fair indication. The sap in the trees starts to flow quite early in the spring, even before the frost is out of the ground, and visible growth of the tree begins on an average about May first to fifteenth. The greater part of the growth of the tree is made in the latter part of May and June, after which date the fruit is being brought to maturity and the buds are being fully developed for next year's growth, so this, May and June, would be the period in which the greatest supply of plant food would be necessary.

BEGIN CULTIVATION EARLY

In order to have this large supply of plant food available during May and June we must begin our cultivation much earlier than this in order that the bacteria busy in the soil may have a chance to multiply and do their work. As the spring advances and the soil becomes drier and warmer, the bacterial and chemical actions go on at a very rapid pace.

It is necessary, therefore, to begin our cultivation in the orchard just as early in the spring as we possibly can so that at the time the trees are beginning to make their greatest growth there will be the largest amount of plant food available. This cultivation can begin in many orchards as early as the last part of April and then be followed up at frequent intervals until the end of June or middle of July, by which time the wood growth has been made.

CONSERVE SOIL MOISTURE

The second reason for cultivation is for the conservation of soil moisture. It has been proved that if a soil mulch is maintained over a field there will be a minimum amount of water lost by evaporation from that field as compared to where the field is left uncultivated, and the surface hard and compact. In California, where water is very valuable, it has been found necessary to maintain a soil mulch of from three to six inches during the dry season when irrigation is the rule in order to prevent the loss of the moisture in the soil. Likewise, in the dry-farming areas they depend on this soil mulch for the conservation of the water.

In our orchards of Ontario a soil mulch of from one to two inches will be sufficient to prevent a wasteful loss of the soil moisture, and there is hardly a year passes but that our orchards suffer from a drought. This loss may be very noticeable, as in the dropping of the fruit after a prolonged drought, or it may not be so apparent but felt in a less vigorous growth of our trees and a consequent loss in the amount of the crop in future years.

(Continued next month)

Value of Bees in Wet Weather

The following extracts from an address entitled "Beneficial Results from the Fertilization of Fruit Blossoms by Bees" in the British Bee Journal, will be of interest:

Rain during the blooming season is a frequent cause of unfruitfulness. Continuous rain may wash away the pollen, and it may lose its vitality, but the principal cause of unfruitfulness at such times is due to the fact that insects, and particularly bees, which promote cross-fertilization between varieties are absent.

Unfruitfulness may be due to a scarcity of bees. I could mention several instances where orchards had proved unprofitable until bees were introduced.

One in particular, a forty acre block of Alexander peach trees, had never borne profitable crops and the owner was about to cut them down. When asked where the nearest bees were kept he said five miles. Those bees were no use to him at all, and I advised him to give the trees another season's trial, and to get some bees at once. He obtained two colonies of bees, which he placed in the centre of his orchard. Of course, by that time more than half the blossom was over, but for all that he got a fair amount of fruit, the trees nearest the hives having the most on them. The next year he bought more bees, with the result that the trees were so laden with fruit that, although they had been thinned, the branches had to be supported by strong wooden props. Needless to say, there were no more complaints, for here was ample proof that all that was required to make the trees fruitful were bees to fertilize the blossoms.

Another fruit grower found that when he brought his hives into the orchard the first year's yield showed a fourfold increase of fruit, independent of the honey crop, showing the importance of having the hives near the trees. Apples this year in his district had been very scarce, excepting his own orchard and those immediately adjoining it.

Cross-fertilization produces very much larger and better flavored fruit than the self-fertilized does. This cross-pollination is almost entirely dependent upon insects, the chief of which are bees. There should be a sufficient number of bees in vicinity, that no matter how unfavorable the weather, the blossoms would be visited often enough to fertilize them perfectly.

BEES PREVENT FROST DAMAGE

If bees are plentiful fertilization takes place as soon as the blossom is ready, and the blossom is the better ready to stand a hard frost. If through lack of bees or bad weather fertilization is deferred, a frost may come in the meantime and result in great loss to the fruit grower.

A Corner Where Spring Flowers Bloom in All Their Sweetness

This glimpse of a corner in Miss Blacklock's garden, Toronto, shows a Polyanthus in bloom. Next to it, at the extreme left, is Snow-in-Summer, then Moss Pink and behind it Phlox Amoena (Lovely Phlox). The large clump to the right of them is the double Arabis (Rock Cress).

A Plea for the Spring Garden

Miss M. Blacklock, Toronto

AFTER the snowdrops, squills, hyacinths and other spring flowers of March and April have gladdened our hearts by their sweetness or wealth of bloom, primroses and bunch primroses (Polyanthi), the well beloved of all England's children, begin to add their quota of delight about the end of April. The primrose, which reaches perfection here during May, comes now in nearly all the shades of crimson and yellow that the polyanthus does, but it seems sweeter and more appropriately dressed in its old-fashioned primrose gown.

The polyanthus is most attractive in the rich, velvety crimsons that it delights to don, although it is beautiful in the rich yellows, creams, and many "art" shades of pink also. It is a very showy flower, and one that is perfectly hardy and easily grown, provided it is kept sufficiently well watered and sheltered from the blazing midsummer sun. It is easily raised from seed, and a strain known as Dean's Hybrids is excellent.

One of the daintiest Barrenworts (Epimedium rubrum) joins the happy throng the first week in May. It is difficult to decide which to advise most, its quaint little cream and crimson flowers, springing from the axils of the leaves, or the beautifully tinted leaves themselves. Both are quite unique. Corydalis nobilis (the Noble Fumitory), with its stout flower stalk, closely packed with yellow and black blossoms; C. bulbosa, with smaller flowers of a somewhat dull magenta-crimson; and C. rubrum, also of a magenta tint but decidedly pretty, make their debut with the daffodils and narcissi. Golden Tuft (Alyssum saxatile) is always in time to spread its golden mantle beneath the tulips and to consort with the double Arabis.

The Leopard's Bane (Doronicum) is the first of the daisy-like flowers to bloom. The variety named Harper Crewe (D. plantagineum excelsum) is the finest one and goes on blooming through a great part of the summer. The flowers are a bright yellow and about the size of our wild oxeye daisy. They last well when cut, which is probably why one sees so many little bunches of them at the street flower stalls in London in the spring, and every house that has a foot or two of earth in front of it boasts at least one plant inside the little iron palings. The plants grow quite tall and are very showy.

The low-growing phlox (P. subulata), often called moss pink, gives great masses of color. There are some new varieties, notably the one named Vivid, that are a purer pink than the type, and some very fine white ones. The Lovely Phlox (P. amœna) is a beautiful rose pink, and as it forms cushions, about six inches high, it is even more striking than the moss pink, which is of prostrate growth. They bloom about the same time and are both very desirable. The Dwarf Iris (see illustration number one) is another early flower that deserves special attention. There are a number of varieties differing greatly in size, colour,

A Dwarf Iris and Lovely Phlox No. 1

and in the time of blooming. T. pumilla cærulea, a midget of only four inches high, with small flowers of a delicate mauve-blue throughout—preceding the others by nearly a week. There are yellow, white, and purple varieties, some with blooms as large as those of the German iris, some coming early and some only fading as T. Florentina, the forerunner of the German iris, begins. They delight in a well-drained soil and sunny situation.

The Virginian Blue Bells (Mertensia Virginica), with smooth glaucus leaves and drooping flowers of the softest plumbago blue, deserves a well-honored place in the spring border, and so does the creeping Jacob's Ladder (Polemonum reptans) with soft grey-blue flowers and pretty leaves, nor must we forget the claims of the perennial Candytuft (Tberis sempervireus), which lies like a patch of freshly fallen snow, in its dazzling whiteness; Snow Queen, a new variety, is the finest. A darling amongst the little creeping things is the Snow in Summer (Cerastium tomentosum) with its fine silvery leaves of almost wool-like texture, and comparatively large white flowers, which begin to open in late May and last until mid June.

Few plants are more charming than the Iceland Poppy (P. nudicaule) (see illustration number two). It is not only an early bloomer, but it is one of the few perennials that blossom all summer, provided no seed is allowed to form. Its long stems and airily poised flowers give it great decorative value both indoors and out, for unlike the majority of poppies, it does not drop its petals the day it is gathered. If picked in the bud stage it will often last several days in the house.

The original colors were pure white, pure yellow, and orange-scarlet, but the last few years have seen several intermediate shades added to these, and also colored flowers with delicate white edges (a la Shirley Poppy), which are exquisitely dainty. It, also, can be easily raised from seed, and will frequently flower a little the first year if sown in a hot bed in March or April.

With the flowers described, as well as those that bloom during March and April, one can have something coming on, to cheer and interest one, from March to the end of May, the three spring months. I do not wish you to infer that there will be much bloom in March, for that would be misleading, but even a few snowdrops are worth while after our long, cold winters, and the procession of the flowers is steady, if sometimes slow, in cold seasons. By the end of April you will find yourself going out each morning to see if there is not something more in bloom since the previous day, and you will be anxiously watching each little bud unfold.

From the first week in May things will run races with each other for precedence, and by the twenty-fourth the spring garden will be in the height of its glory, which will only be excelled by June's lavish display. All this time the average gardener is gazing at his empty beds and wondering if he dare have his tender bedding plants put in by the twenty-fourth, while the man who goes in for

Iceland Poppy (Papaver Nudicaule) No. 2

annuals, "first, last and all the time," is nursing his tiny plants that will not reach blooming size until the end of June at the earliest—he and his bedding-out-plant rival having the pleasant thought to cheer them that their gardens will be in their prime when either they themselves or most of their friends will be out of town for their summer holidays.

The Perennial Border

F. E. Buck, Central Experimental Farm, Ottawa.

The following are a few short rules to follow in the making of a perennial border:

Prepare the ground for perennials in the early autumn, or prepare in the spring, and plant annuals in it for that season. The cultivation of these annuals will greatly improve the ground for the perennials. In preparing the bed, work in thoroughly plenty of well-rotted manure.

Underdrain the border if the soil is heavy. If it is very heavy add, in addition to manure, some sand or peat as well.

Order the plants from the nursery company in good time. This will ensure your getting all the plants you order, and it will enable you to plant early and to get the best results.

Order most of the plants in the summer for autumn planting, except a few that are best planted in the spring. These latter you may order during the winter.

Plant as soon as received and don't on any account let the roots dry out. Set the plants a little bit deeper than they were in the nursery, but don't smother them.

If you can raise most of the plants yourself from seed, do so. Sow the seed early in the spring, and the plants will be ready to transplant into the border by the fall.

A FEW DON'TS

Don't try after color effect until you know your flowers well.

Don't forget that quiet harmonies are often better than strong contrasts.

Don't forget to pick off the old flower heads and dead stalks. By so doing you will improve the general appearance of the border and encourage some plants to make a second growth.

Don't forget that a little water applied during the daytime is worse than none at all. If you give any give plenty.

Don't forget to stake and tie up the very tall plants.

Don't forget that in the early stages of a perennial border you can hardly expect to have a good balance of bloom at all seasons, but strive after that if you have a large border.

Don't forget that too much variation, even in a flower border, tends to monotony. Have big clumps of color if possible.

Don't forget that exact grading from the tall plants at the back to the dwarf plants at the front of the border will give a stiff appearance. To avoid this plant an occasional large and striking plant in the foreground.

Don't forget that the drip from large trees is harmful to most plants.

Don't be afraid to throw out plants you do not care for.

A Portion of the Pergola in Mr. MacKendrick's Garden

Canadian Gardens---The MacKendrick Garden

A. K. Goodman, LL. B., Toronto, Ont.

ARTICLE No. 5

A MAN in the creation of a garden unconsciously reveals himself. The garden at 7 Chippewa Ave., Toronto Island, is no exception to this rule, for this is the garden, not of a florist, a botanist or a gardener, but of a man—a big, bold, intellectual, forcible man. A florist would have followed well known rules of gardening, namely, that there should be simplicity, instead of extravagance, masses, instead of scatterings, law instead of lawlessness, in respect to variety and of colour, and of form, and that there should be a focus or point of interest, or constructional centre, a dominant note of form, light or color, with other parts subordinate to this.

The Border

Mr. MacKendrick Entertaining Visitors

The President of the Toronto Horticultural Society is here shown describing his methods of rose culture to members of the Society who visited his garden last summer.

It is said, harmony is better esthetics than contrast, that we should use foliage in masses that the blue of the sky, water, the green of the earth, shrubbery and trees are a delight forever, that bright color has its cheer, and we should plan our garden for it, prizing it as an accent rather than a constancy. But the popular president of the Toronto Horticultural Society cuts out all sentiment, his grounds stand disclosed, nothing is suggested or left to fancy, he simply grows flowers in profusion, beautiful flowers in abundance, with accuracy, and magnificent results. Taking the well-known flowers that we all love, he extravagantly gives them the soil, water, nourishment and conditions they ask for, and compels them to bloom in a riot of beauty never before seen on the Island.

Mr. McKendrick is successful with all the flowers. The tulip, in remarkably rich and glowing colors, large size and massive substance, type of the brilliant splendour of the Orient, from whence it came, the fragrant stocks and wall flowers, the sweet pea, charming in form, beautiful and varied in color, deliciously sweet,—snap dragon and sweet william, roses of many varieties, phloxes, pæonies, dahlias, lilies, irises, gladioli, foxglove, daffodils, narcissi, pinks, asters, and many, many others.

I have seen this garden but once, and have spoken to the man only a few times, yet the one is a reflex of the other. This garden is an educational floral asset of the city, where the man with a small yard can see and study individual flowers, grown in perfection, but it has nothing of Lord Bacon's suggestion of the mystic, or "of avenues, arbors and fountain, and the edge of a wilderness."

The Care of Tulips

Wm. Hunt, O.A.C., Guelph, Ont.

Where tulips are planted in flower beds or borders where summer decorative plants such as coleus, geraniums, cannas and others, are to be planted, it is advisable to dig up the tulips so as to be able to thoroughly cultivate and manure the ground for the summer plants mentioned. By manuring the ground well at this time the bulbs will not require any manure or fertilizer when planted.

The tulip bulbs can be left in the ground until it is time to set out the

A Portion of the Rose Garden

In the rear is the summer tool house.

summer decorative plants, usually about the first week in June. They should then be lifted carefully with the top growth on, and should be heeled in thickly in a shallow trench and covered with four or five inches of soil. The tops only should be above the ground. Any out of the way corner of the garden will do to heel in the bulbs. It is best to mark the spot with a label or stake.

About the end of July or early in August the bulbs should be again lifted from where they have been heeled in, the tops removed, and the bulbs dried a little in the sun for a day or two. They should then be laid in shallow boxes and put in a rather cool cellar or room until planting time in October. By treating bulbs such as hyacinths, tulips and crocus in this way, a majority of the bulbs can be used for several years successively, where they have to be dug up for summer plants.

Fertilizers For The Garden

Frank T. Shutt, M. A., Dominion Chemist, Ottawa.

(Concluded from April Issue)

FERTILIZER formulæ might be multiplied almost indefinitely. Enquiries are almost daily received for mixtures suited for special crops, and fertilizer manufacturers pander to this demand by putting on the market a host of brands labelled for the different crops. It is quite true that there are types or classes of crops and that these differ as regards their food requirements, that each class has its dominant fertilizer. Thus, as already remarked, vegetables and leafy crops generally, clover, peas and other legumes, respond more particularly to potash while the cereals more especially require phosphoric acid with nitrogen. But too much confidence should not be placed in these special trade names, and it will be much more to the point to study the guaranteed analysis of the brands, at the same time keeping in mind the especial functions of the elements, the character of the soil and the predilections of the various classes of crops.

In furnishing—to meet the popular demand—the following formulæ for special crops, the writer does so with no little hesitancy, since they are apt to be accepted as the best mixtures under all conditions, and such, if we have made clear the principles underlying this art of supplying plant food, could not be possible. Fertilizers, like many other things, must be mixed and applied with brains if the best results are to be secured. There is no royal road, nothing that will take the place of knowledge and experience. While, therefore, all these formulæ have been used, and used successfully, no claim is made that they will everywhere and on all soils prove the best that could be devised. They are rather to be considered as suggestive in character.

Perennial Flower Border.—Bone meal, five to ten pounds; superphosphate, four to eight pounds; sulphate of potash, one to two pounds; and nitrate of soda, one to four pounds, per forty square yards. The superphosphate may be replaced by basic slag if the soil is naturally deficient in lime.

Annuals.—These have a short season of growth and therefore require large amounts of plant food. However, if the soil is rich, half of the following minimum amounts will suffice: Superphosphate, ten to twenty pounds; sulphate of potash, one to five pounds; and nitrate of soda, ten to twenty pounds, per forty square yards.

Phlox in Bloom in Mr. MacKendrick's Garden

Roses.—These are usually planted in soil that has been well enriched with manure. In such cases phosphate only will be necessary to induce blooming: Bone meal, ten to twenty pounds; superphosphate or basic slag, ten to twenty pounds, per forty square yards.

Lawns.—The preparation of the ground for lawns is all important; it is better to defer seeding a year than to sow on soil that is in poor mechanical condition and deficient in available plant food. It should be plentifully supplied with humus-forming material. Before seeding, the following mixture may be worked into the surface soil: Ground bone, five to ten pounds; muriate of potash, one to two pounds, per forty square yards. The grass may be top dressed with nitrate of soda at the rate of a half pound for forty square yards two or three times during the season if the growth is poor and yellowish.

Potting Soil and for Use in Greenhouses.—For potting soil, house plants, and so forth: Bone meal, four pounds; sulphate of potash, one pound. To be thoroughly mixed with five hundred to seven hundred and fifty pounds of the potting soil. If the growth lacks vigor, nitrogen can be applied as nitrate of soda to the pots. This will be most readily done by dissolving three-quarters of an ounce of the nitrate in one gallon of water and applying say two ounces of the solution every fortnight or three weeks, for a six-inch pot. It should be borne in mind that excess of nitrogen will give a leafy development and suppress blooming.

For soil in greenhouses, frames, and so forth, two pounds of the above mixture of bone meal and sulphate of potash can be used for each one hundred square feet thoroughly incorporating the fertilizer with the soil. If available nitrogen is thought desirable, follow with one-half to three-quarters of a pound of nitrate of soda for a hundred square feet.

When the soil has not previously been enriched, it may be found convenient to apply the fertilizer in liquid form. For house plants, garden flowers and vegetables, the following may be used: Nitrate of soda, three parts; sulphate of potash, one part; and superphosphate, three parts. Dissolve the mixture in water at the rate of one ounce in three gallons of water (there will be slight insoluble residue from the superphosphate that may be neglected) and use rather sparingly once every two or three weeks. If the soil is very rich (as from additions of well rotted manure) and the plants run to foliage, omit the nitrate of soda from the above formula.

No attempt has been made in this article to discuss the fertilizing question in all its bearings, but merely to give in as concise a form as possible some of the more important principles upon which a rational use of fertilizers is based, together with certain formulæ which may be found helpful in ordinary garden practice. In the mixtures suggested, only the more commonly used and easily obtained ingredients have been employed, thus simplifying the matter for those who have yet to gain their experience with fertilizers.

In conclusion, it might be stated that not all garden soils stand in need of fertilizers or will repay their use. It is true, however, that wherever the amount of stable manure available is inadequate to supply the full measure of the plant food demanded by this intensive form of agriculture, fertilizers may be employed with very considerable profit, and, further, that by their judicious use the excess of available plant food so desirable in the garden soil may be kept fairly well balanced and therefore the best results in root, stem, leaf and fruit obtained.

The Annual Border at the Ontario Agricultural College

Planting Notes for May and June

Wm. Hunt, O. A. C. Guelph, Ont.

IF the season is at all a backward one—as it appears likely to be this year—the early part of May will be quite soon enough to do any planting or transplanting that may be required in the perennial border. Better results can be obtained after the plants have started root action than very early before root action has started. Any trimming in, or rearranging of clumps or groups of perennials, and the transplanting of same, should be done before top growth is more than two inches in height. One or two early flowering kinds may be left until later before dividing or transplanting them. The several varieties of the phlox subulata, garden primrose, and cowslips are among those that may be left until they are out of flower before being divided. Even these are sometimes better transplanted very early in spring.

There are a few kinds of perennials that should not be disturbed in spring or early summer. Paeonies, Dicentra (Bleeding Heart), and German Iris should be dug up and divided, if they require it, about the end of September or early in October. Lilies of all kinds should not be disturbed in the spring; early in September is the best time to take up and divide these, but do not disturb them at all as long as they give good flowering results.

If the clumps of spring flowering bulbs, such as narcissus, tulips, and crocus, are getting too crowded, mark the spot with a label where they are growing, and then dig the bulbs up about the end of July, dry them a little, and put them in the cellar until planting time in October. Almost all of the other kinds of perennials, such as campanulas, larkspurs, giallardia, monarda didyma, coreopsis, Dictannus fratinella, woundwort, snow-in-summer, and other similar kinds of plants, can be transplanted if they require it in the spring.

ANNUALS

Nearly all of the early sown annuals can be planted out from flats or cold frames from about the middle to the end of May, acording to prevailing weather conditions. A few of the most tender kinds, such as nasturtiums, zinnias, balsams, and climbing Cobaea scandens and Tropaeolum Canariensis (Canary Creeper), should not be planted out until the ground is warm, and all danger of frosty or chilly nights is past. It is better to wait a week until the weather gets warm and settled, than to put them out to be chilled so as to give them a set back, or perhaps to be frozen and ruined.

The first or second week in June is usually quite early enough to set out very tender plants. Nasturtiums and the climbing plants mentioned should be grown on early in pots, or sown where they are to grow for the season, as they do not transplant readily from flats or cold frames. The distance apart to plant annuals—or to thin out when sown in the border—must be governed by the habit of growth and height of the plant. A good general rule is to plant or thin the taller growing bush kinds from two to three feet apart, the medium height plants ten to twelve inches, and the dwarf varieties two to four inches apart in the rows, and the rows for the dwarfer growing kinds six to eight inches apart. Phlox Drummondii and mignonette may be left rather thick in the rows, about four inches apart.

The following list of annuals include most of the popular and best kinds, with their approximate height in feet and inches. They are also placed on the list in each class in the order of merit they are generally conceded to have as decorative plants for the garden.

CLIMBING ANNUALS

Sweet Pea, four to six feet.

Cobaea scandens, eight to twelve feet.

Climbing Nasturtiums, six to eight feet.

Convolvulus (Morning Glory), six to eight feet.

These are suitable for training on a trellis for a background where required for an annual border, or for covering fences or verandahs.

PERENNIAL CLIMBERS

Good hardy perennial climbers for spring planting are Aristolochia sipho (Dutchman's Pipe), Ampelopsis Veitchii, and Ampelopsis quinquefolia, and clematis in variety. These may be planted as early in the spring as possible.

TALL ANNUALS FOR BACKGROUND OR CENTRE OF LARGE BED

Ricinus (Castor Oil Bean), four to six feet.

Annual Sunflower, three to six feet.

Cosmos, three to four feet.

MEDIUM HEIGHT ANNUALS

Asters (Comet and Late Branching), twelve to eighteen inches.

Nasturtium (Dwarf), eight to twelve inches.

Phlox Drummondii, twelve to eighteen inches.

Ten Week Stocks, twelve to eighteen inches.

Zinnia (Tall), two to three feet.

Balsam, one to two feet.

French Marigold, twelve to eighteen inches.

Salpiglossis, two to three feet.

Schizanthus, twelve to eighteen inches.

Scabiosa, two to three feet.

Silene armeria (Lobels), twelve to fifteen inches.

Coreopsis (Calliopsis), one to two feet.

Calendula, one to two feet.

African Marigold, two to two and a half feet.

Gypsophila elegans, twelve to fifteen inches.

French Marigold, ten to twelve inches.

Eschscholtzia, ten to fourteen inches.

inches (new).

Diascia Barbarae, ten to fourteen inches, (new.)

DWARF ANNUALS

Sweet Alyssum, six to ten inches.

Candytuft, eight to ten inches.

Portulaca, four to six inches.

Dwarf or Liliputian Zinnia, ten to twelve inches.

Dwarf Cicely Phlox, eight to ten inches.

Virginian Stock, ten to twelve inches.

Swan River Daisy, ten to twelve inches.

TENDER GREENHOUSE PLANTS

It is not safe to plant out geraniums until the last week in May or possibly early in June. The more tender plants such as coleus, iresine, salvia, ageratum, canna, alternanthera, Caladium esculentum (Elephant Ears), should not be plant-

ed out in the flower beds until the first or second week in June at the earliest, to be quite safe from a set back.

The following table showing the principal kinds of tender bedding plants, with approximate height of same and distance apart to set the plants, will be a guide in setting them out:

Geraniums—Twelve to fifteen inches high; ten to twelve inches apart.

Coleus—Twelve to eighteen inches high; ten to twelve inches apart.

Iresine (Tall)—Ten to twelve inches high; eight to ten inches apart.

Ageratum—Six to ten inches high; eight to ten inches apart.

Salvia—Fifteen to eighteen inches high; twelve to fourteen inches apart.

Canna—Three to four feet high; fourteen to sixteen inches apart.

Caladium esculentum (Elephant Ear)—Two to three feet high; eighteen to twenty inches apart.

Alternanthera—Six to eight inches high; four to six inches apart.

GLADIOLI

The following corms of these can be planted at any time from early in May until the second week in June. As a rule, the best results are secured by planting about the second or third week in May. Plant flowering corms four inches under the surface of the soil and from four to six inches of space between the corms whether planted in rows or in groups. The old dry corm of last year should be removed before planting the fresh corms, also all of the small cormels. The small cormels should be planted as early in May as possible. A shallow drill about two inches in depth is deep enough to plant or sow these in. They can be sown thickly, about an inch apart in the drills, very similar to the way sweet peas are sown.

The hardening of tender plants gradually to outdoor conditions is one of the very important features of successful spring and summer planting. To expose plants at once from indoor to outdoor conditions without this "hardening off" process often results in serious injury from the hot sun, as well as from cold, chilly weather. Stand the plants out of doors in a cold frame or where they can be temporarily protected from hot sun in the daytime, or from cold at night, for a week or ten days before planting them out. Plants treated in this way make a much better start when planted out than when planted directly from the window or greenhouse into the flower border.

Dig and rake the ground well before planting. Any fertilizer dug in now should be well rotted, almost the nature of soil itself.

Plant when the ground is moist, not when it is very wet or soddened. Just before rain and in dull warm weather is the best time for planting.

Set all the plants out—especially pot plants—in the exact position they are to occupy, before starting to plant, if possible. It is easier to do this first than to dig them up and replant them, as is often done if not in their proper position.

Do not disturb the roots of potted plants too much when planting, except to remove the old drainage material. Avoid tramping the soil down any more than really necessary, especially soils of a heavy nature.

Pack the soil fairly firm around the roots. Do not leave the surface of the soil too fine, after planting; it packs down too hard if raked very fine on the surface.

Water plants well once if soil is very dry. Keep surface of soil stirred occasionally with a small hoe. Never use a large rake for this purpose; it is dangerous. Many a good plant has been snapped off by using a rake for surface stirring the soil.

A small hoe and a garden trowel are indispensable implements for planting purposes.

Vegetables in Young Orchard*

A. H. MacLennan, O. A. C., Guelph, Ont.

When growing vegetables in the young orchard the welfare of the young trees must be borne in mind and the crops not allowed to encroach upon them. The next thing to consider is the market for the vegetables and the facilities to reach that market. When that is decided, one may plant what suits his conditions the best.

For early potatoes the seed should be selected the year before and only those hills chosen that are still green and vigorous at the time of digging. This should then be stored in a light cellar, so that the potatoes may get green, and the temperature be maintained at thirty-eight degrees Fahrenheit, or as near to it as possible. About six weeks before planting, the temperature should be raised to seventy degrees Fahrenheit, and the tubers set upright with the eye and up, so that the best and strongest shoot may grow—the others should be rubbed off. The system of allowing only one shoot to grow will produce fewer potatoes, but all of them will be of marketable size.

THE SOIL

The ground should be thoroughly prepared. Three or four days before planting, the furrows should be run twenty-eight inches apart and four inches deep. This will permit the soil to warm up more quickly and deeper. If one is using commercial fertilizer, it should be placed in this furrow and covered one-half inch with soil. The sets are then carefully placed in the furrow nine inches apart, sprouts up, and then covered with a hand rake or single horse cultivator. Care must be taken not to break off the shoots or one will lose more than the time gained.

The Early Ohio is the earliest variety, but it is not a very heavy cropper. Early Eureka is a week later and a heavy cropper. The Empire State, Green Mountain, and Davy's Warrior are main crop potatoes.

LATE CABBAGE

For late cabbage, the young plants must be started in a seed bed that can be covered because of the cabbage fly that appears in late May and early June. A plot eight feet by twelve feet will hold enough plants to set an acre. The large headed types should be planted about thirty-six inches by twenty-four inches, and the smaller early types twenty-four inches by eighteen inches. When transplanting to a field, about half of the larger leaf surface should be pruned off to reduce transpiration, and a batter of clay and cow manure should be made in which the roots of the young plants are immersed and carried to the field. They should be taken from this and planted direct. This treatment will give the plants a start in the ground because they have both moisture and fertilizer at hand in the shape of a film of this batter adhering to their roots.

ONIONS

The soil for onions should be worked down very fine and level and rolled because the onion grows on the surface of the ground and the seed requires to be barely covered. First of all the seed should be tested for germination power.

There are two methods of getting the crop into the ground—One, the seed may be sown with a drill in rows twelve inches to fourteen inches apart, which will require four to five pounds per acre. The seed drill should be tested and the sowing done acordingly, so as to be sure of sowing enough and not too much. This will save much tedious work of thinning later on. This system is suitable for all of the medium-sized onions. If the sowing is done properly, no thinning will be necessary, as the small percentage of smaller onions may be used for pickling. Two, the seed is started in a hot-bed or greenhouse in February and later transplanted into the field. This will give a large onion and is suitable for the onions of the Gibraltar type.

*An address delivered at the Guelph College during the short course in fruit growing.

Trim out and burn the old raspberry and blackberry canes. Currant and gooseberry bushes should also be thinned. The fruit is improved both in quality and size.

A Bed of Ginseng as Grown in Ontario

Three-quarters of an acre of Ginseng plants, as grown in the gardens of Orr and Nickols, of Mono Mills, Ont., are here shown as photographed May 24, 1911. These growers have another half acre of Ginseng growing in the woods. The bed here shown was started in the year 1900, and proved a success from the start. Notice the lattice shade which is a necessity in the successful cultivation of this crop.

Growing Seed Potatoes*

I BEGIN this short article by making reference to the soil, for I am convinced that the kindly soil of Muskoka has largely contributed to my success as a grower of seed potatoes. My farm is slightly rolling, with natural drainage, exposed to south and east, and sheltered from the north-west by a granite ridge. The soil, being a rich, warm, sandy loam, quickly responds to good culture, and being underlaid by a compact subsoil, commonly called hardpan, it retains moisture, even in the driest seasons, such as 1911.

As potatoes require abundant humus in the soil, I prefer to grow in rotation following peas, which has been sod the previous year. Legumes are credited with drawing lightly on the manurial constituents of the soil and the vines, acting as a mulch, tend to smother weed growth and leave a clean, mellow seed bed for the following crop. I also grow on sod land, breaking pasture land the first week in August, disking and harrowing at once to hasten decomposition of the sod and prevent grass from growing. This is repeated as often as required until snowfall. When sleighing comes, and before the snow gets deep, I haul and spread twenty loads of barnyard manure to the acre. In the spring, early in May, as soon as the land is dry, I run a disk over it. I then plough manure under and harrow to a level surface. With a common single plough, with marker attached, I then begin on one side of the field, throwing out planting furrows, right and left alternately, four inches deep, planting by hand, distance apart depending upon habit of variety, and covering by a simple device drawn by one horse, resembling a snow plough, which covers two rows at a time and does the work satisfactorily. I run a short toothed, steel harrow lengthways of the rows, three times at intervals, finishing just as the plants appear above the ground. I then run the cultivator, getting close up to the plants thus making as little hand hoeing as possible. No implement yet invented can take the place of the hoe, and I use it every year so as to insure clean culture.

I cultivate four times, hilling only slightly by running the cultivator deep and narrow, thus making the ridges incline towards the plants, which ensures them getting the full benefit of the rainfall. I generally finish cultivating about July tenth, just as the plants are beginning to blossom. I never allow beetles to make havoc with the leaves, as potatoes never recover from a check at this stage of their growth. I use land plaster and paris green—thirty pounds of plaster to one pound of paris green, applied dry, when leaves are damp with dew. Two applications are generally sufficient but should a third aplication be required I think it is time well spent. This is the time to reduce the pest—it saves worry the next spring.

*A paper read at the Ontario Winter Fair, Guelph, December 1911.

As soon as the ground can be worked plant hardy vegetables, such as garden peas, onions, radishes, lettuce, parsley, spinach, carrots, beets and leeks.

Early Work With Celery*

In case the grower adopts the plan of transplanting, the seedlings will be ready for the first handling in from four to six weeks from the time the seed is sown. The seedlings may be transplanted in trays or to beds in the open ground.

This transplanting answers two purposes: First, the seedling plant of celery has a straight root or tap root which is broken in transplanting, causing a large mass of fibrous roots to be formed. In the case of a plant allowed to remain in the seed bed until planting out time this tap root has gone far down into the soil and the plant has formed very few side roots, consequently it suffers a great shock in the process of planting in the field, and a large number of plants will need to be replaced.

. Secondly, when transplanting plants twice is practised there is no necessity for thinning and a more uniform lot of plants is obtained.

When the seed bed is prepared, the soil of which it is composed should contain as much moisture as possible, and yet be in good condition to handle. After sowing and covering the seed, the bed should be sprinkled lightly. During the period between seeding and the appearance of the plants the bed should be watered only as often as it shows indications of dryness; however, the surface should never become dry. During the first few days a moist cloth may be spread over the surface in order to conserve the moisture, but this should be removed before the seedlings begin to appear. After the plants are up care should be taken not to water too heavily, as they are liable to damp off, but the ground should never become so dry as to check their growth.

If possible, the planting should be done when the soil is rather moist and the atmospheric conditions suitable to the subsistence of the plants until the roots can again furnish sufficient moisture to supply them. The bed should be thoroughly watered a few hours before the plants are removed and a knife or trowel should be run between the plants so that they may be lifted with a clump of earth and with most of their roots attached.

Mark off the rows with a wheel hoe or cultivator. Place the plants in a shallow tray and set in the ground from the tray. When the plants are set and the soil well pressed down around them, they should be just a little below the general level of the soil, but not low enough to become covered by heavy rains.

Get the cold frame ready for plants as soon as they are sufficiently advanced to move from the hot beds.

*Extract from a bulletin of the United States Department of Agriculture.

The Canadian Horticulturist

Published by The Horticultural Publishing Company, Limited

PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

1. The Canadian Horticulturist is published on the 25th day of the month preceding date of issue.
2. Subscription price in Canada and Great Britain, 60 cents a year; two years, $1.00. For United States and local subscriptions in Peterboro (not called for at the Post Office), 25 cents extra a year, including postage.
3. Remittances should be made by Post Office or Express Money Order, or Registered Letter. Postage Stamps accepted for amounts less than $1.00.
4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.
5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.
6. Advertising rates One Dollar an Inch. Copy received up to the 18th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.
7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed

THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

MARKET COMMISSIONERS

The marked success which last year attended the work of British Columbia's Market Commissioner in the leading fruit markets of the prairie provinces led the directors of the Ontario Fruit Growers' Association a few months ago to request Hon. James S. Duff, the provincial minister of agriculture, to appoint a similar market commissioner to represent Ontario in the west. Even although only a limited number of fruit growers ship fruit to the west during the early part of the season, it may be expected that the request of the fruit growers will be granted. While the government is about it, it should consider the advisability of appointing a second commissioner to visit and report regularly from the leading fruit markets in the east.

The great bulk of the tender fruit raised in Ontario is marketed in Ontario or in Montreal. Many hundreds of fruit growers consign fruit to the fruit markets in the large centres and to the smaller cities as well. Often gluts occur on these markets because the growers, not being in touch with one another, ship too largely to a few markets. Much of the fruit, also, goes forward poorly packed, and quantities of it are injured in transit. Were the government to appoint a market commissioner it would be his duty to visit these markets, as often as possible, and interview the local fruit dealers and railway officials. He would report the results weekly through the press and by special reports to the fruit growers and fruit growers' associations. By comparing the condition in which Ontario fruit from different districts reached the dealers, as well as fruit from points in the States, many valuable points would be learned by the growers, as the reports of such a commissioner would be followed carefully.

The amount of fruit marketed by the fruit growers of British Columbia in the western markets is such a small fraction of the quantity of fruit marketed in the east by eastern growers the benefits that would follow the work and recommendations of two such commissioners may readily be seen. Any one who read the weekly reports that were published last year by British Columbia's market commissioner will realize the need that exists for action being taken along this line by the Ontario government.

ADVERTISING APPLES

Such great developments have taken place during the past few years in the production and marketing of fruit, one may well wonder what the near future has in store for the fruit industry. As yet no systematic endeavor has been made to develop the home markets. Sooner or later this will be undertaken by means of carefully prepared advertising campaigns. The results that should follow such a campaign can hardly be estimated.

In the United States, where the competition for the best prices on the home markets is becoming more keen each year, some thought is already being given to this subject. In a recent issue of The Spy, the official organ of the International Apple Shippers' Association, there appeared an article entitled "Advertising the Apple," which gives some indication of what advertising might do to increase home consumption. The author of this article said in part, "So far as properly advertising the "apple is concerned, we growers and dealers are all sound asleep. We've got to "wake up. What, think you, would be the "outcome if positions were reversed and "the great advertising captains who are "now exploiting breakfast 'foods,' rubber "heels and scouring soap, took possession of "our apples and we their spearmints, powders and pink pills? I venture to say the "new apple owners would waste no time "in teaching that it's held 'bad form' to "start the day without eating a baked apple, "that the school children should eat more "apples and less glucose, that pork eaten "without apples is dangerous. In fact, we "would then learn a hundred uses for apples "never dreamed of before, and that it is "better to have no money in the bank than "no apples in the pantry. The consumer "would be taught the varieties and their "various good qualities; taught that buying "apples is buying bright cheeks, happy "smiles, sparkling eyes and elastic step. "Who would set a limit to the possibilities "of such a campaign? On the other hand, "what of our soap, soup and sawdust? "Well, you know what would happen if we "used no more sense in exploiting their "uses than we do our apples, and, mind "you, apples don't require half the boost "that some things do, which I might mention, that are making millions for their "owners."

The author of the foregoing is right. The first step in the approaching reform will come when our cooperative associations commence to advertise, in the magazines and daily press, different varieties of boxed apples under their special brands. When they do there will soon be a marked increase in the consumption of apples on our home markets, and oranges and bananas will be apt to lose some of their popularity.

CITY SOCIETIES

The directors of the Ontario Horticultural Association acted wisely when they decided to petition the Ontario government to so amend the Horticultural Societies Act as to make it possible for horticultural societies to be organized in each electoral district of a city. Hitherto the grant a city society could receive has been limited to five hundred dollars. Thus no matter how many members a city society might secure, the amount of its government grant automatically ceased when its membership and expenditures for horticultural purposes exceeded a certain point. The result has been that societies in cities like Ottawa and Toronto have not been able to accomplish the good work they otherwise might.

Toronto is now so large one society cannot begin to look after the work that should be done. As a result in part of this condition there has recently sprung up, in Toronto, besides the Toronto Horticultural Society, the High Park Ratepayers' Association. This association, comprising approximately one thousand members, is located in the western part of the city. It is undertaking most valuable work in the line of encouraging and assisting its members to improve their boulevards and gardens. In spite of this fact, it has not been entitled to receive any government grant.

While it may not be advisable as yet to organize two societies in Hamilton or Ottawa, there is room for good work to be done by three, and possibly four, societies in

Toronto, and this without the work of the present society being handicapped in any way. Their establishment, however, would make it necessary for the government to increase materially the grant voted for distribution among the societies of the provinces at large.

MOTHERS' DAY

This year, as usual, the second Sunday in May will be observed as Mother's Day. Last year Mother's Day was celebrated more generally than ever before, and this year we may expect that it will be attended by still further evidences of public approval. It is a day that we should all respect.

Well may we, who are so fortunate as to have our mothers still with us, remember them on Mother's Day, not only by wearing a flower ourselves, but also, by giving them, where this is possible, tangible evidence of our love in the form of a gift of flowers. Where this cannot be done we should send these flowers in time that they may receive them on that day with letters that will tell them still more plainly how we appreciate what they have been and are to us. Those whose mothers have passed beyond will be blessed themselves and will bless others by their example if they observe the day in the customary way by wearing a flower, white if possible.

Last year a number of churches observed Mother's Day. Special services were conducted and appropriate addresses delivered, especially to children. Special services of this character may well become a fitting feature of the day. The cultivation of love for one's mother for flowers embodies such a lovely idea it is not surprising that the day is increasing so rapidly in public favor.

Many lovers of flowers heard with deep regret a few weeks ago of the death of Mrs. Annie L. Jack, of Chateauguay Basin, Quebec. The late Mrs. Jack, besides being the author of the well-known book, The Canadian Garden, was a well-known and appreciated contributor on floral and fruit growing subjects to numerous Canadian publications. During the past year several articles from her pen appeared in the columns of THE CANADIAN HORTICULTURIST. Art, music and flowers abounded in Mrs. Jack's farmhouse home, where, in addition to her literary pursuits, she accomplished the notable achievement of bringing up ten children, six sons and four daughters. Death called her away suddenly at the age of seventy-four. Canada was enriched by the life of Mrs. Jack.

PUBLISHER'S DESK

Have you noticed the great increase that has taken place in the circulation of THE CANADIAN HORTICULTURIST during the past five years? In 1907 the average circulation of THE CANADIAN HORTICULTURIST was 6,627. Last year the average circulation was 9,541. Up to date, this year, including the May issue, the average circulation has been approximately 10,500, and we anticipate that the average for the year will be considerably over 11,000 copies per issue. During the past five years the advertising rate of THE CANADIAN HORTICULTURIST has been only seven cents a line. The great increase in our circulation, amounting to considerably over seventy-five per cent for the period mentioned, has not only greatly benefited our advertisers, but, naturally, has also greatly increased our expenditures. We now find it necessary to advance our advertising rate to a flat rate of one dollar twenty-five cents an inch, or nine cents a line. This new rate will go into effect on and after the first of next August. Existing contracts will, of course, be fulfilled at our present rates. Our advertisers are thus being given three months' notice of the change in rates. In view of the fact that the increase in advertising rate amounts to only twenty-five per cent, while, as already stated, the circulation of THE CANADIAN HORTICULTURIST has been increased over seventy-five per cent, it is clear that our new advertising rates will be relatively lower in proportion to our circulation than our rates have been up to comparatively recently. According to our space rates our proposed advance in rates is small indeed. Up to the first of this year we charged as high as two dollars an inch for a one-inch advertisement receiving one insertion. From this rate we allowed reductions in proportion to the size of the advertisement and the number of times it was to appear. The average cost per inch of space was one dollar twenty cents. Our new rate will be only one dollar twenty-five cents an inch. As soon as possible after the new rates have gone into effect we purpose making a number of improvements in THE CANADIAN HORTICULTURIST that will prove of benefit not only to our advertisers, but to our readers as well.

We find it very difficult to predict with safety each month the articles which will appear in the succeeding month's issue. Contributors who sometimes promise faithfully to furnish articles on stated subjects are sometimes prevented, for one reason or another, from doing so, or their articles reach us a little too late in the month to make their publication possible. Sometimes, also, the pressure on our reading columns is so great, articles which we expected to publish have to be held over to a later issue. This month, for instance, we have been able to publish only a small part of a splendid article by Mr. F. E. Buck, of the Central Experimental Farm, Ottawa, on the perennial border. The best part of this article has been held over for publication in our June issue. An article on potato growing, by Prof. C. A. Zavitz, of the Guelph Agricultural College, which was to have appeared in this issue, reached us too late for publication, and will also appear in our June number. Two articles of special interest that we expect to feature in the June number include one on June spraying in the orchard by Mr. R. J. Messenger, of Bridgetown, N.S., and one dealing with the profit derived by thinning fruit by Mr. R. M. Winslow, Provincial Horticulturist, Victoria, B.C. A portion of the first prize essay, entitled "My Favorite Flower, the Geranium, and How I Grow It," by Mr. A. V. Main, of Ottawa, will also be published. The articles already on hand for our June number ensures its proving one of the most interesting issues of the year.

Recent Bulletins

Bulletin 151, of the University of Illinois Agricultural Experimental Station at Urbana, Ill., describes some important insects of Illinois shade trees and shrubs. Bulletin 154 deals with the home vegetable garden.

From the Maine Agricultural Experiment Station at Orono, we have received bulletins 195 and 196. The former is entitled "Insect Notes for 1911." The latter is Part III. of "The Fungus Gnats of North America."

The New Jersey Agricultural Experiment Station has issued bulletin 240 and the New Hampshire Experiment Station bulletin 155, both of which deal with the inspection of fertilizers. The former is particularly complete. It deals with the subject at length.

Company—Good vs. Bad

Advertisers are recognizing more than ever before that space in a publication that will publish only clean, truthful, reliable advertisements, is worth much more to them than space in a publication where their announcement is apt to appear alongside an advertisement which is a bald lie or ridiculous exaggeration, or some disgusting patent medicine ad. In the one case, readers recognize that every advertisement which appears in a publication has the personal endorsement of the publishers. In the other case it is simply a matter of, "Here it is. Use your own judgment, and if you are "stung," it is your own fault for not being wise enough to distinguish between a fake and a reliable advertisement."

The attitude of advertisers towards this policy of The Canadian Horticulturist to publish only such advertisements as the publishers felt they could personally recommend, is pretty well shown in the following letter recently received from the Gilson Mfg. Co., of Guelph, who have been using the Canadian Horticulturist to advertise their line of power sprayers.

"We want to commend the attitude you take for the protection of the readers of your paper in your 'Protective Policy.'

"If you follow out this policy honestly and consistently, you will gain prestige with your readers and your advertisers, and your advertising space will become more valuable as time goes on."

The fact that advertising space in The Canadian Horticulturist IS becoming more valuable is shown by the increasing volume of advertising carried, the first four issues of 1911 having been the largest issues for their respective months ever published, and having carried the greatest amount and value of advertising. This splendid showing has been brought about to a great extent, we believe, by the fact that advertisers know their announcements in The Canadian Horticulturist are in good compay, as well as by the fact that the circulation of The Canadian Horticulturist has made such a marked increase during the past year, being now over 11,500, an increase of over 2,000 within the past year. And it is still increasing.

If you are not advertising in The Canadian Horticulturist, it will pay you to get our rates and look into its merits for your purpose.

We do not admit advertisers to our columns except such as we believe are thoroughly reliable.

Fruit Growing in Ontario---Its Possibilities.

W. H. Bunting, St. Catharines, Ont.

I HAVE had an opportunity, by direction of the Honourable Minister of Agriculture, to visit during the last six months every province of the Dominion in order. In the course of this trip I have come into personal contact with a great many representative fruit-growers in the different provinces, have visited them in their homes, have looked over their orchards, and have discussed with them many of the features of the industry as it is being carried on under varied conditions. I wish at the outset to express appreciation for the cordial reception given me, and the interest displayed in my mission by these gentlemen. The officials of the various Provincial Departments of Agriculture, of the Agricultural Colleges and the Experimental Farms, as well as the members of the staff of the Fruit Division, have taken every pains to make my trip pleasant and to facilitate the securing of such information as I sought. I am also deeply indebted to Mr. J. A. Ruddick, the Dairy and Cold Storage Commissioner, under whose direct supervision I have been working, for much valuable assistance, it being at his suggestion that the enquiry was instituted.

The Province of Ontario, on account of its geographical position, its large areas of suitable land, and its general adaptability for fruit culture, is easily the most important province in the Dominion from the standpoint of the fruit industry, commercially and otherwise. This province comprises four out of the ten districts which have been outlined by Mr. McNeill, Chief of the Fruit Division, for the purpose of defining fruit-growing conditions and production throughout the entire Dominion. These four districts, while differing in themselves and from each other, are all extremely important. Every one of them produces large quantities of fruit of a varied character. In addition to supplying an extensive local demand, these fruits must seek an outside market for the immense surplus grown annually.

A short description of these districts may be in order, so that we may obtain a better idea of the province as a whole. Their location may be briefly described as follows:

District 1. Counties bordering on the north of Lake Erie from Niagara River, including western portions of Lake Ontario,—to Detroit River and Lake and River St. Clair.

District 2. Counties on Lake Huron inland to York, with the exception of parts of Wellington, Grey and Waterloo above the 1,000 feet contour line.

District 3. Counties bordering on Lake Ontario, north to Sharbot Lake and Georgian Bay.

District 4. St. Lawrence and Ottawa Valleys to Lake St. Peter and a portion of south-western Quebec.

These are simply arbitrary divisions and do not differentiate the localities as being entirely distinct from one another as a whole. In fact they merge imperceptibly one into another at their boundaries, and can only be referred to as outlining in a modified way the general characteristics of the sections of country included

DISTRICT NUMBER ONE

District number one—In addition to large orchards of apples, pears and plums, this district contains the major portion of the commercial peach orchards and grape vineyards of the Dominion. It is also largely devoted to the production of cherries, both sweet and sour, small fruits of all kinds, and early vegetables, as well as supplying the greater portion of the products required by the large number of canning factories stationed at strategic points from one end of the district to the other.

This district has been the scene of many changes during the past decade. The infestation of the San Jose Scale at several important centres has led to the decline and destruction of many of the large apple orchards for which it was formerly noted. This condition has turned the attention of the people to the increased planting of such fruits as are not so susceptible to injury from this cause or are more easily protected. In some cases, where conditions warranted, the production of early vegetables on a large scale has also been undertaken with splendid results.

Experience gained in the treatment of this once dreaded insect has, however, reached such a stage that its presence is now looked upon more as a salutary tonic than an unmixed evil, from the fact that it compels better and more careful methods of orchard treatment if a healthy existence is in any degree to be maintained. It having been clearly demonstrated that even large apple trees could be successfully protected against this enemy, and brought into splendid condition for the production of

*Extract from a paper read at the recent Dominion Fruit Conference in Ottawa.

THE
Canadian Nursery Co.
LIMITED
10 Phillips Place
MONTREAL

Have still a good stock of hardy, Northern grown

Apple Trees,
Currants,
Gooseberries,
Raspberries, etc.

and an immense stock of Specimen Shrubs, Ornamental Trees, Roses, etc.

The collection of Perennial Plants and Peonies on their nurseries at Pointe Claire is probable the most complete in Canada.

LISTS AND INFORMATION FURNISHED FREE OF CHARGE

SPECIAL GLASS
FOR GREENHOUSES

Conservatories of The Dale Estate, Brampton, Ont.
Glass supplied by our Toronto Branch

GOOD QUALITY, FLAT, EVEN THICKNESS, AND WELL CUT

We make a specialty of supplying Glass for vegetable forcing houses

PILKINGTON BROS.
Limited
Toronto, Montreal, Winnipeg, Vancouver

Mention The Canadian Horticulturist when writing

high-class fruit, far-seeing orchardists at once began, with very gratifying results, an active campaign to care for those orchards which were not too severely injured, or in which a foothold had not as yet been obtained by the insect. Confidence has now been restored, a magnificent market is opening up, and the increased planting of apples, as well as other fruits, is now going on apace.

Advantage should be taken of the fact that fruit ripens considerably earlier throughout this territory than elsewhere, and prospective planters would be well advised if a considerable portion of their plantings were of the better sorts of the earlier varieties of apples, and of those fruits which will carry well for considerable distances. This would enable them to supply more fully the western prairie markets with the fruit required during the summer and fall months, a considerable portion of which is being imported from the United States. If the cold storage facilities, which are available on the ocean steamships, were fully utilized, an extensive trade could be also developed with the English market, in early, fancy, well-colored fruit. This has already been demonstrated by the trial shipments of peaches and early apples which have been made during the past few years by the Dominion and Provincial Departments of Agriculture, as well as those of private individuals.

TENDER FRUITS IN DEMAND

Notwithstanding that greatly increased plantings of peaches, pears, plums, cherries, grapes and small fruits have been going on throughout the district each year, the demand for this class of fruit has more than kept pace with the supply. In consequence prices have been advancing and all good fruit offered is quickly purchased by eager customers. This situation has caused great activity in fruit lands in favored locations, and it has become a question whether this feature is not being overdone to the detriment of legitimate investment.

DISTRICT NUMBER TWO

District number two—This section covers a large territory, whose residents are for the most part engaged in mixed farming, with an apple or plum orchard as subsidiary to the main activities of the farm. It is extremely gratifying to note, however, that as a result of the work that has been undertaken by the Provincial Department of Agriculture through its Fruit Branch, a very large number of men in this district have had their attention called to the great possibilities for profit that are lying dormant in a hitherto comparatively neglected portion of their farms. A widespread interest is now being taken in connection with the production of better fruit by many of the people. Considering the extent of territory involved, this district offers splendid conditions for an almost unlimited supply of the best late-keeping varieties of winter apples, in addition to many varieties of other fruits.

DISTRICT NUMBER THREE

District number three contains the major portion of the extensive orchards of winter apples of standard varieties, and has done much to establish the reputation which Canadian apples enjoy in the export markets. In common with districts one and two, an active campaign is in progress to improve the quality of the fruit now grown and to increase the orchard area.

Districts two and three are capable of becoming the most important producers on

Douglas Gardens

Oakville, Ontario

CHINA ASTERS

QUEEN OF THE MARKET, WHITE AND PINK,
LAVENDER GEM,
ROYAL PURPLE.
BRANCHING WHITE AND CREGO, PINK.

Prices: 10 for 15 cts.; 100, 75 cts.; carriage postpaid.

Not less than 25 of one variety at the 100 rate.

Antirrhinum (Snapdragon), each 10 cts.; 10, 60 cts.

Scabiosa—a fine plant—each, 10 cts.; 10, 60 cts.

Stocks, "Out and Come Again" and Large Flowering, each 5 cts.; 10, 25 cts.

Salvia, Var. Bonfire, fine plants, each 10 cts.; 10, 60 cts.

GLADIOLI

Groff's Hybrids, 10 for 25 cts.; 25 for 55 cts.
Groff's Hybrids, choice section of light colored sorts 25 for 75 cts.
Groff's Hybrids, choice section of red and scarlet sorts 25 for 60 cts
Carriage prepaid.

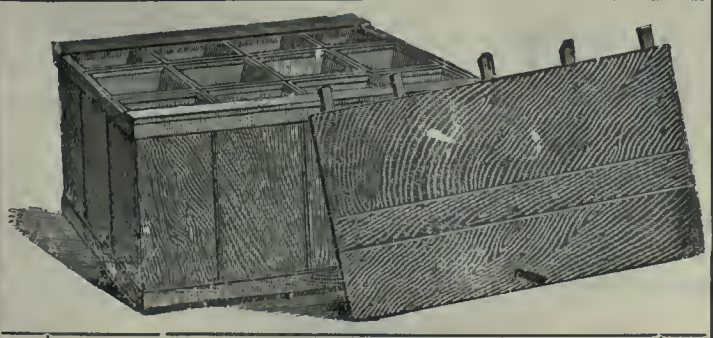
KNIPHOFIA (Torch Lily)

Var. Pfitzeri—A very satisfactory plant. Is most effective when planted in clumps. Each, 15 cts.; 10, $1.25. Carriage prepaid.

JOHN CAVERS

BASKETS

We are Headquarters for all kinds of Splint Baskets



Veneer supplied for the protection of trees from mice during winter

FRUIT PACKAGES A SPECIALITY

SEND FOR OUR PRICES

The Oakville Basket Co., Oakville, Ont.

Mention The Canadian Horticulturist when writing

GOOD CROPS

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STUMPING POWDERS

USED FOR

Planting Trees
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Digging Wells and Ditches, Etc., Etc.

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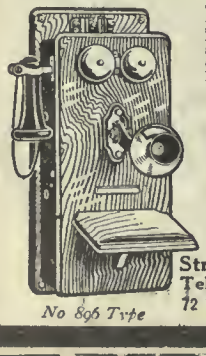
SATISFACTION GUARANTEED OR MONEY REFUNDED

Farmers need a telephone more than city men. Every errand means a trip to town. Help is scarce and getting more difficult to find every year. The farmer must help himself by utilizing everything that will save time.



With an Independent Telephone on the farm, you can always get the latest market reports, assistance in case of emergencies, banish lonesomeness and make the young people contented.

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STRATFORD
EXTENSION
LADDER

It is the safest and best on the market. Fitted with automatic hooks that lock at every rung and unlock between the rungs

It is
LIGHT, STRONG
EASILY OPERATED
AND DURABLE

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THE
Stratford Mfg. Co.
Limited
STRATFORD, CANADA

Makers of Ladders for every conceivable purpose

PRUNING SAW

Patented Oct. 6th 1908

Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address

FRUITGROWERS' SAW CO., Scottsville, N. Y.
Representative for Ontario, Jas. E. Johnson, Simcoe, Ont.

the American continent of high-class, long-keeping winter apples. This opportunity, if fully taken advantage of, should result in such a condition of prosperity and contentment that instead of the rural population of Ontario showing a decrease from time to time a very marked increase should take place in exact ratio as the public becomes seized with this fact. It is generally admitted that fruit growing, properly conducted, provides for the profitable employment of a larger number of persons during a longer season than almost any other phase of general agriculture.

DISTRICT NUMBER FOUR

In district number four, owing to the winter season being more severe and protracted, the standard varieties of winter apples, such as the Spy, Baldwin, Greening and King, do not succeed as a commercial proposition. Fortunately, however, there is a class of apples of the highest quality for which this district is noted. These varieties are in great demand, and from their hardy, vigorous nature, grow to perfection and produce bountifully. This district is the home of the Fameuse, Scarlet Pippin, McIntosh Red, St. Lawrence, Alexander, Wolf River and Wealthy. It is to be regretted that there is not the activity and enthusiasm that should be in evidence towards maintaining the prestige that the St. Lawrence and Ottawa Valleys and the south-western townships of Quebec have gained for the production of these splendid apples. Unusual circumstances have conspired to give many of the finest orchards in this district a serious set-back from which they have not been able to entirely recover. New plantings are not being made with sufficient rapidity to replace these declining orchards and there is grave danger of a serious shortage in production in this part of Canada unless active measures are taken to correct the situation. A survey of some of the magnificent orchards that are still to be found and which are being handled under careful, approved methods, should be sufficient to inspire confidence in the younger men who have farms adapted for this purpose, and induce them to at once begin the planting of orchards to replace some of those which are passing away. There is perhaps no district in the Dominion to-day where an aggressive educational campaign is more necessary or desirable than in this particular territory.

Haldimand Growers Organize

That the county of Haldimand, Ontario, is awake to the fact that more fruit of a much higher quality can be produced from its orchards is evidenced by the fact that those interested have organized an association to be known as the "Haldimand Fruit-Growers' Association."

A public meeting in the interests of fruit growers was held in Hagersville on March 20. There was a splendid representation from many parts of the county. Haldimand being situated along the shore of Lake Erie, is especially adapted to the growing of a superior quality or apples. The soil is largely composed of a moderately heavy clay, rolling and well drained. There are many acres of fine orchard throughout the county, now being neglected, which only need up-to-date methods of culture to make them produce crops that will become one of the best paying branches of farm work. It is through cooperation that these ill-cared for, unprofitable orchards can be changed into veritable gold mines.

BEZZO'S FAMOUS PRIZE ASTERS

Prizes at New York State Fair, 1910 and 1911. Highest award Berlin Horticultural Society, 1911.

Vick's Violet King, Mikado White, Rochester Pink, Early Branching Rose, White; Late Branching Rose, Pink, White, Lavender; Semple's Pink; Royal Purple, Lavender Gem; Giant Daybreak, Shell Pink; and Purity, White; truly the aristocrats of the aster family; 20c per dozen, $1 00 per hundred; packed and labelled separately in wet moss. All plants sent by express and guaranteed to arrive in good condition. Express prepaid on orders over $2.00. Remit by money order.

All plants cold-frame (not hot-bed) grown and ready about May 24. Order early.

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SPRAYS AN ACRE IN 15 MINUTES

Three nozzles to a row, four rows. Absolutely WILL NOT CLOG. 12 gallon air-tank, automatic, hand-controlled from driver's seat.

The SPRAMATOR rids field crops, vineyard and trees of all pests. Guaranteed pressure of 125 pounds with 12 nozzles working. Sprays potatoes perfectly, tops and vines. Fitted for one or two horses and also made to be operated by hand.

AGENTS WANTED

We publish a complete treatise on crop diseases. Tells facts all growers should know. Ask us for a copy to-day.

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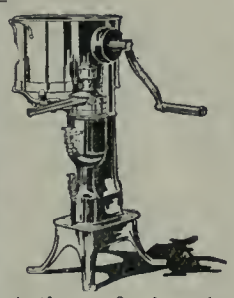
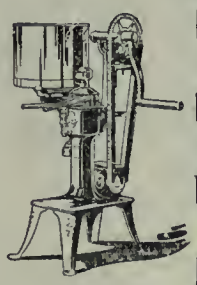


The Right Price To Pay For a Cream Separator



WHAT is the right price to pay for a cream separator? The price of the best, of course. The first cost of the best separator is so small, compared to the profits it makes—that you ought not to hesitate about paying for it. And the difference between an I H C and the next best is so marked, that you ought not to hesitate in deciding.

I H C Cream Separators Dairymaid and Bluebell

have made records on thousands of farms. They are famous everywhere for durability, close skimming, light running and easy-to-clean advantages. They are built for hard, twice-a-day service and many years of it. They have milk and dust-proof gears which are easily accessible; a patented dirt-arrester which removes the finest particles of dirt before the milk is separated; frame and moving parts protected from wear by phosphor bronze bushings; large shafts, bushings and bearings; also many other features which you will be interested to know about.

Call on the I H C Dealer

I H C Cream Harvesters are made in two styles—Dairymaid, chain drive, and Bluebell, gear drive—each in four sizes. The I H C local agent will give you catalogue and tell you all the facts, or, write the nearest branch house for catalogues and any special information you desire.

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International Harvester Company of America

(Incorporated)

At Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, North Battleford, Ottawa, Quebec, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton.

IHC Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U. S. A.

Pride In Your Garden

will be natural, and justified, if you plant Ewing's Reliable Seeds and give them proper care. The bumper crops which, for forty years or more, have been grown from

EWING'S Reliable Seeds

are explained by the care which we take to give our customers only specially selected seeds that are clean, fresh, healthy and true to type—seeds that produce grains, roots, vegetables and flowers of which the growers may well be proud. **Write for our handsome illustrated catalogue,** and if your dealer hasn't Ewing's Seeds order from us direct.

WM. EWING & CO.,
Seedsmen
McGill St., Montreal.

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EWING'S RELIABLE SEEDS MONTREAL

Aphine

The Insecticide that Kills plant Lice of every species

$2.50 per Gallon; $1.00 per Quart.
Dupuy & Ferguson, Montreal, Can.

NA-DRU-CO. N D & C Co TRADE MARK

NA-DRU-CO ROYAL ROSE TALCUM POWDER

NA-DRU-CO Royal Rose Talcum is as comforting to Baby's tender skin as it is to Mother's wind-chafed cheek or Father's chin smarting after a shave. Its remarkable fineness—its pronounced healing, antiseptic qualities — and its captivating odor of fresh-cut roses — have won for Na-Dru-Co Royal Rose Talcum the favored place on the dressing tables and in the nurseries of the most discriminating people.

25c. a tin, at your Druggist's— or write for free sample to the

NATIONAL DRUG AND CHEMICAL CO. OF CANADA, LIMITED, - MONTREAL.

191

FLOWER POTS

Hanging Baskets, Ferns Pans, Etc.

We have a large stock of all sizes on hand, and can ship orders without delay.

Order Now Before the Rush

Our pots are smooth and well burnt. We have our reputation to keep up.

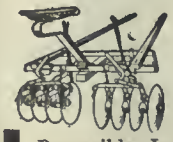
Send for Catalogue & Price List

The Foster Pottery Company, Ltd.

Main St., West - Hamilton

The Bissell

GARDEN HARROW



By adding wings to the Bissell Garden Disc harrow it extends over 10 ft. wide. With wings detached it is 4 feet wide. Adjustable—single horse, or light two-horse harrow. Low or high seat. Reversible—In-throw to Out-throw. Cuts clean, even furrow and is a strong, durable Harrow. Call on local dealer or write Dept. N for catalogue.

T.E. Bissell Co., Ltd., Elora, Ont.

See ad. of Orchard Disc Harrow page x.

Pedigreed Nursery Stock *

U. P. Hedrick, N. Y. Experiment Station

My own belief is that there is nothing to gain even though there be a scintilla of truth in the claims of those who would have nursery stock sold with a pedigree. I believe that we should be doing great injustice to nurserymen, and indirectly therefore to fruit-growing, should we require growers of trees to take buds or grafts only from the bearing plants which seem to be superior to other individuals of their kind. I believe that a fruitgrower can spend his time to better advantage than in attempting to breed fruit trees by bud selection.

The practical difficulties in growing trees from selected buds, granting for the minute that improved stock may be so obtained, are almost insuperable. The following are a few of them:

First, a bearing tree surpassingly good in one quality, may be deficient in others. A tree bearing large apples might be unproductive, subject to fungi or insects, lacking in vigor or hardiness, or short-lived. Selecting for one quality will not do. The more qualities, the more difficult the tree to find and the more complicated is selection.

Second, the selected buds must be worked, in the case of tree fruits, on roots that are variable. To have "pedigreed" trees it is necessary to have "pedigreed" roots as well as "pedigreed" tops.

Third, the cost of trees would be vastly increased if nurserymen were required to bud from or to go back every few generations to bearing trees. Opportunities for dishonest practices would be greatly multiplied. The advertisements of some who sell "pedigreed" stock are an insult to an intelligent man and are only a foretaste of what we shall have if fruitgrowers force nurserymen to compete in selling "pedigreed" stock.

Fourth, it is the experience of those who have taken buds from bearing trees that the resulting nursery plants lack vigor, and remain weaklings for several years.

Fifth, if pedigreed trees become the vogue, tree-growing must become a petty business. Climate and environment would permit nurserymen who are growing pedigreed stock to propagate only a half dozen varieties of any fruit. Not more than this number of sorts is so pre-eminently adapted to any one geographical region as to give good mother trees.

Sixth, fruit trees are not sufficiently well fixed in their characters to make selection from single "best" trees worth while even should their characters be transmissible. Thus, trees in many cases do not show their best attributes until late in life; or to the contrary fail as they grow older; or are affected for better or worse by moisture, food, or physical conditions of soil in certain seasons; or insects and fungi may give them a variable and uncertain standing. A nurseryman with the best intentions might thus propagate from a prepossessing tree only to find later that he and his customers had been deceived.

Seventh, heritable variations can be told only by growing the parts bearing them—by studying the offspring, not the ancestor; by looking forward, not backward. This is impossible in the nursery.

In conclusion, the burden of proof is upon those who advocate pedigreed trees, for the present practices of propagating fruit plants are justified by the precedents of centuries.

*Extract from an address delivered at the meeting of the New York State Fruit Growers at Rochester, January, 1912.

Bruce's Flowering Bulbs

GLADIOLUS

Choice Mixed, 10 for 25c; 25 for 60c; $2.00 per 100, post paid.

Croff's Hybrid Seedlings, mixed, 10 for 30c; 25 for 60c; $2.00 per 100, post paid.

Bruce's White and Light Shades, 10 for 40c; 25 for 85c; $3.00 per 100 post paid.

Childsi, Mixed, 10 for 50c; 25 for $1.00; $3.75 per 100, post paid.

Bruce's Superb, mixed, made up by ourselves from all varieties, the best, 10 for 60c; 25 for $1.25; $4.50 per 100, post paid.

Croff's World's Fair Collection. Novelties in all colors, grand, 11c each; 10 for $1.00; 25 for $2.25, post paid.

New Grand Named Varieties, almost any color, 24 sorts, 20c each; 24 for $3.75 post paid.

DAHLIAS

Splendid named sorts, all colors, Show, Cactus and Pompon Varieties, 22c each; $2.20 per dozen, post paid. Ordinary varieties, mixed, 12c each; $1.20 per dozen, post paid.

TUBEROSE

The Pearl, double white flowers. each 5c; per dozen, 40c; per 100, $2.50, post paid.

Single Orange Scented, beautiful orange-like blossoms,each 5c; dozen 50c; 100, $3.50 post paid.

LILIES

Auratum, Lancif, Album and Rubrum, Elegans, Pardalinum, Tigrinum, Umbellatum, Tenuifolium and Wallacei, each 20c; per dozen, $1.80, post paid.

FREE Write for our handsomely illustrated 112 page Catalogue of Vegetable, Farm and Flower Seeds, Bulbs, Plants, Poultry Supplies, Garden Implements, etc., now ready

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affords protection to your lawns, flowers and children, in addition to adding a finishing touch of beauty that is most pleasing to the eye and satisfying to the owner.

Peerless Ornamental Fencing is unequaled for beauty of design, artistic finish and strength of construction.

We have spent years in the manufacture of fencing and consequently we know what is best to give real fence service and how to make such a fence at a price you are willing to pay. Don't be misled by the inferior and cheap article offered by catalog houses, because such fencing is dear at any price.

Our Agent will supply you, but if there is none near write us direct, mentioning the name of your dealer, and we will see that your requirements receive prompt attention.

Write for our printed matter. It is mailed free on request.

The Banwell-Hoxie Wire Fence Co.

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Buy "Vanco" straight Fertilizing Chemicals —mix them at home—and thus save duty on "imported mixtures" and get genuine fertilizers of guaranteed analysis.

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WHY ARE YOU IMPORTING PHOSPHATE AND AMMONIA WHICH IS A BY-PRODUCT OFF YOUR FARMS OF WHICH YOU ARE EXPORTING MANY THOUSAND TONS ANNUALLY. BONES AND WHICH CONTAIN LARGE QUANTITIES OF PHOSPHORIC ACID AND AMMONIA.

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PURE BONE MEAL IS THE CHEAPEST

FERTILIZER.

THIS PLANT FOOD IS ALL FROM OUR CANADIAN SOILS AND SHOULD ALL GO BACK.

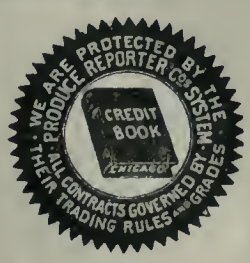
SEND FOR PRICES, ETC.

THE W. A. FREEMAN CO. LIMITED
HAMILTON, CANADA

Good Prices Always

For Your Fruit and Vegetables

We Are Protected by the Produce Reporter Co's System. All Contracts Governed by Their Trading Rules and Grades



We Solicit Your Consignments

Send for Shipping Stamp

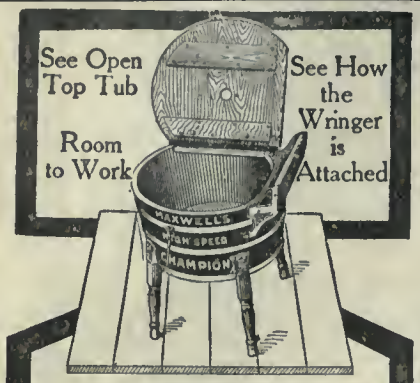
OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto market, we have established branch warehouses with competent men in charge at **Sudbury, North Bay Cobalt, Cochrane and Porcupine.** In time of congestion on the Toronto market we have a ready outlet through these branches. We never have to sacrifice your interests.

Branch Warehouses: Sudbury, North Bay, Cobalt, Cochrane and Porcupine

H. PETERS
88 Front St. East, Toronto

References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.

International Apple Shippers' Association



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HIGH SPEED
CHAMPION

The Wringer Board extends from the side, out of the way of the cover. This allows practically the whole top of the tub to open up—makes it easy to put in and take out clothes.

No other washer has as large an opening. No other washer can be worked with crank handle at side as well as top lever.

Do you use Maxwell's "Favorite"—the churo that makes quality butter?

Write us for catalogues if your dealer does not handle them. 89

DAVID MAXWELL & SONS, ST. MARY'S, Ont.

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Established OF CANADA 1875

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Capital Paid-up.	.	6,000,000.00
Reserve Fund	.	6,000,000.00
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Experimenters in this field encourage us to believe that they may sometime illumine the darkness but one cannot see by the lights they have thus far brought. "The assertion that outstrips the evidence is a crime" in this case as in any other. Let us have real, precise, abundant evidence before demanding a reform that will revolutionize nursery practices.

Drainage Lessons Free

The Ontario Agricultural College is again renewing its offer of assistance to farmers and fruit growers to aid them in laying out their drainage systems. The Department of Physics has a special staff of drainage advisors for this work. There is no charge for the services of these men, the only outlay to the applicant being the travelling expenses, which are low. As the railway fare is only one cent a mile for this work, and as several surveys are always made on one trip, the expenses are divided among the several parties concerned.

Anyone wishing to have a drainage survey made should drop a card to the Department of Physics, O.A.C., Guelph, whereupon a regular application form will be sent, and later on one of the Department's Drainage Advisers will make the survey.

Preparing Land by Powder

C. C. Nixon, B. S. A., Peterboro, Ont.

Not all land in its natural condition is adapted to apple growing. But lately I have found out that much of it can be improved and apple trees made to thrive grandly thereon. I refer particularly to those clay formations having impervious subsoil and hard-pan. These may be broken up by means of blasting powder, or dynamite, and the trees afterwards set will thrive as they do on naturally favorable soil.

Stumping powder in orchard work has several uses, one of the chief of which is in connection with setting out young trees. It saves much labor and time in planting the trees and ensures an open porous subsoil, conducive to the best growth and large ultimate yields of fruit.

The work of excavating for a tree, to do it properly by the old method of hand digging, may take an hour. Stumping powder will excavate it in an instant. The spaded hole will be hard all the way down, making it difficult for the transplanted roots to take hold, which is one of the chief reasons why transplanted trees so often die.

HOW A FARMER PLANTS TREES

Down in the New England States, notably in Virginia, stumping powder and dynamite have been used with great success in connection with orchard work. The following is the testimony of a Virginian farmer who has used dynamite in orchard farming and writes of his experience for Rural Life:

"I have just finished the planting of seven hundred trees, beautifully located on a southern slope, with an altitude of five hundred and twenty-five feet. The soil in this locality is red clay, with a slaty subsoil, so we think the only way to be successful with fruit trees is to blow up the planting holes with dynamite.

"I prefer the ground to be first drilled out three feet deep, then shoot one stick of dynamite in the bottom. This does not always blow it out to any great extent, but it turns the soil over, breaks up the slate and aerates the subsoil. This method we believe will put our slaty soil in condition to produce better apples and more of them."

And so it is with many of us farmers in

This Washer Must Pay for Itself

A MAN tried to sell me a horse once. He said it was a fine horse and had nothing the matter with it. I wanted a fine horse. But I didn't know anything about horses much, and I didn't know the man very well either.

So I told him I wanted to try the horse for a month. He said "All right, but pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse wasn't "all right" and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse although I wanted it badly. Now this set me thinking.

You see I make Washing Machines—the "1900 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about the horse, and about the man who owned it.

But I'd never know, because they wouldn't write and tell me. You see I sell my Washing Machines by mail. I have sold over half a million that way.

So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tub full of very dirty clothes in Six minutes. I know no other machine ever invented can do that, without wearing out the clothes.

Our "1900 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it don't wear the clothes, fray the edges nor break buttons the way all other machines do.

It just drives soapy water clear through the fibres of the clothes like a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse. Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight too. Surely that is fair enough, isn't it?

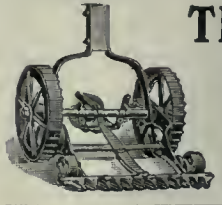
Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months, in wear and tear on the clothes alone. And then it will save 50 cents to 75 cents a week over that in washwoman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 50 cents a week, send me 50 cents a week 'till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line to-day, and let me send you a book about the "1900 Gravity" Washer that washes clothes in 6 minutes.

Address me this way—

B. E. Bach, Manager, 1900 Washer Co., 357½ Yonge St., Toronto, Ont.



THE CLIPPER

There are three things that destroy your lawns, Dandelions, Buck Plantain and Crab Grass. In one season the clipper will drive them all out.

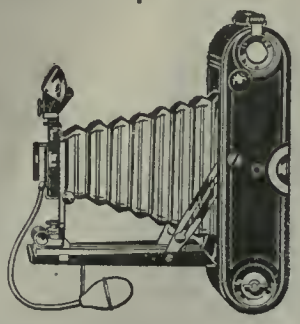
CLIPPER LAWN MOWER CO., Box No. 8, Dixon, Ill.

THE CANADIAN GARDEN

A delightfully interesting and practical little book, written by Mrs. Annie L. Jack. Tells you just the things you want to know to make your garden a success. Cloth binding, 120 pages, illustrated. Price, 75c.

THE CANADIAN HORTICULTURIST, - Peterboro

If it isn't an Eastman, it isn't a Kodak.



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Simplicity has made the Kodak way the easy way in picture taking; quality has made the Kodak way the sure way.

Kodaks $5.00 and up. Brownie Cameras, (they work like Kodaks) $1.00 to $12.00 are fully described in the Kodak catalogue. Free at your dealers or by mail.

Canadian Kodak Co., Limited
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The Best
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and
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SEE CATALOGUE

H. P. VAN WAGNER,
Stoney Creek, Ont.

GLADIOLI

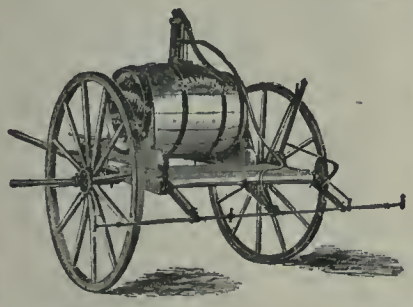
Special varieties and 1st sized mixed sold.

1 in.—1¼ in. strong fresh bulbs, XXX mixture of Gandavensis, Lemoinei and Nanceianus, light colored.

$1.00 per 100 $9.00 per 1000

REGINALD BLAISDELL,
ARNPRIOR, ONT.

Hand Spramotor



Made with 4 to 8 nozzles. Wheels and row sprayer adjustable in width from 26 to 36 inches and in height 16 inches.

Mounted on cart suitable for one horse. Perfect spray for row crops, vineyards or trees. High pressure sends chemical searching into all parts of plants or trees and makes destruction *certain*. All SPRAMOTORS are guaranteed. AGENTS WANTED.

Ask for our *free* treatise on crop diseases. You should know what it tells.

Heard Spramotor Co.
1392 King St., London, Canada.

An IHC Manure Spreader Saves Valuable Fertilizer

THE farms of Europe have been worked for centuries, yet the average production of wheat from those farms is nearly 30 bushels per acre; more than double the average yield of American farms. What is the reason for this tremendous difference?

The reason is that European farmers know the value of stable manure as a fertilizer. The average European soil is not as fertile as the average American land, but the European grows heavier crops because the fertility of the soil is kept up constantly by the liberal use of stable manure.

While there is not so much stable manure in this country, what there is can be used to far greater advantage when an I H C manure spreader is used to distribute it.

I H C Manure Spreaders Corn King, Cloverleaf

make one ton of manure go as far as two tons spread by hand. By pulverizing the manure and spreading it in an even coat, light or heavy as may be needed, all over the land, they insure a perfect combination of the plant food elements with the soil. There is no over fertilizing in spots, to produce an uneven stand of grain. Each square foot of ground gets the same treatment.

The superior mechanical construction of I H C spreaders is the reason for their effectiveness. They solve every problem of correct spreading. Light draft is secured by the proper construction of wheels and correct principles of gearing. When I H C spreaders are thrown in and out of gear the beater drive chain is not shifted.

The advantages of this construction are: Positive traction—the chain engages nearly half the teeth on large sprockets instead of only a few; chain worn on one side only instead of on both sides as in other constructions; simple, effective chain tightener instead of a complicated, troublesome one. These all add to the durability of the spreader.

I H C spreaders have no reach. They do not need one. Because of this feature an I H C spreader can be turned in its own length, a great convenience at any time. I H C spreaders have many other advantages which the I H C local dealer will explain to you. See him and get catalogues and full information, or if you prefer, write

CANADIAN BRANCH HOUSES:
INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)
At Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, N. Battleford, Ottawa, Quebec, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton

I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A

Implements for Orchard and Vineyard

Spring Tooth Harrows
10, 15 or 17 Teeth

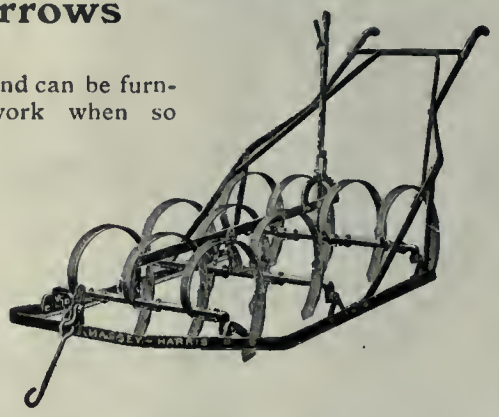
The 10-Tooth size is in one Section and can be furnished with handles for vineyard work when so ordered.

Spraying Outfits

Driven by the famous OLDS Engines.

Vineyard Plows

Both Walking and Riding Plows especially built for orchard and vineyard work.



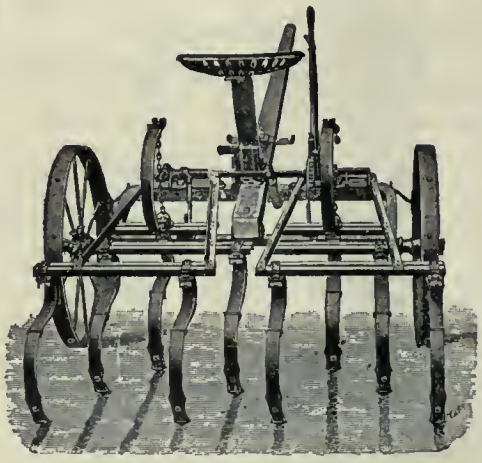
Orchard Disc Harrows

REVERSIBLE

To throw the dirt to or from the trees or vines.

ADJUSTABLE

Gangs can be adjusted as required. Extension can be be furnished for working under branches.



Cultivators

A great variety—for cultivating small fruit—for vineyards—for orchards.

Grape and Berry Hoes, etc.

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Massey-Harris Co., Limited

REGINA
SASKATOON
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IMPROVED AUTOMATIC COMPRESSED AIR SPRAYER

BEST HAND SPRAYER MADE AT THE PRICE

READ THE FOLLOWING:.

Winona, Ont.

"The Sprayer that I purchased from you last spring is a most valuable little machine. I have no hesitation in recommending it to anyone who requires an inexpensive and reliable spray pump. It is excellent, and I do not know of any other hand machine for the price that could do better work." E. D. Smith, Ex-M.P.

Drop us a card for Descriptive Circular and special rates.

CAVERS BROS. MANUFACTURERS **GALT, ONT.**

Mention The Canadian Horticulturist.

Strawberry Plants

Fine, stocky, well rooted plants. All leading varieties. Send for free catalogue and price list.

S. H. Rittenhouse,
JORDAN HARBOR, ONT.

Northern Grown Trees

Apple, Pear, Plum, Cherry, Peach, Grapes, Small Fruits, Ornaments, Evergreens, Roses, Flowering Shrubs, Climbers, Etc. Everything in the Nursery line. Catalogue free. Send list of your wants for prices.

J. Wismer, Nurseryman, PORT ELGIN, ONT.

Ontario and other fruit growing provinces of Canada,—we can, by taking thought, make our land more suitable for apple growing, ensuring the success of our newly set apple trees, and thereby greatly increase our land in productiveness and in real value.

Quality Spells Success*

W. H. Bunting, St. Catharines, Ont.

It was my privilege to visit one or two important sections of the United States in connection with my recent tour of the fruit-growing districts of Canada. The one thing that impressed me most strongly, amongst our cousins to the south, was the strong emphasis placed on the question of quality by those who were most successful. Every possible method that will secure quality, finish and beauty of appearance in the product is being sought by many of these men and adopted. The result is apparent in the high prices which are now being obtained for Hood River, Wenatchee and Yakima apples, and in the reputation which many New York State leaders have established in the principal and most discriminating markets of the east.

While in the older fruit sections of the Dominion insect pests and fungous diseases have obtained a strong foothold, and have caused great loss and damage, such progress has been made in the discovery of remedies and methods of control that in the majority of cases the alert fruit-grower need not fear disaster from these causes. Climatic conditions may on occasion threaten his very existence. They should serve to awaken greater perseverance and determination. The disappointments that occur at times should develop a resourcefulness in overcoming difficulties, and promote a strength of character worthy of admiration.

It has been demonstrated over and over again, in every province of the Dominion, that while there is a very large surplus of indifferent fruit produced and offered to the public, the market never has been, and will not for years to come, be fully supplied with fruit that can called strictly "fancy." Altogether apart from the satisfaction derived from handling a first-class article, permanent pecuniary success depends upon a proper appreciation of this fact.

If I can give the Canadian fruit-grower a more thorough realization of the value and importance, not only to himself but to the country at large, of leaving no stone unturned and sparing no effort to secure the very highest quality and establish the very highest standard in every detail of his business, then I hope that the time and effort spent in making this investigation will result in giving some little impetus to the fruit industry of Canada.

Fined for bad Packing

The following persons have been convicted for illegal marking and packing of fruit since January third last: J. L. Denike, Prinyer, Ont.; M. Storms, Cressy, Ont.; J. N. Dalmas, Wooler, Ont.; G. W. DeWolf, Three Mile Plain, N.S.; G. C. DeWolf, New Minas, N.S.; J. Sexton, Falmouth, N.S.; Howard Bligh and Son, Sheffield Mills, N.S.; R. J. Graham, Windsor, N.S.; R. A. Jodrey, Gaspereaux, N.S.; M. L. Warner, Kingston, N.S.; Kingston Fruit Co., Ltd., Kingston, N.S.; A. L. Outhit, Kingston, N.S.; W. W. Pineo, Waterville, N.S.; W. C. Hamilton, Grand Pre, N.S.; R. E. Harris, Wolfville, N.S.; Guen Wo and Co., Vancouver, B.C.

*Extract from a report presented at the recent Dominion Fruit Conference.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

Good Work by Societies

Some very attractive option lists are being distributed this year by a number of the horticultural societies in Ontario. The list sent out by the St. Catharines Horticultural Society is a remarkable one. There are fifty-four options. The complete option list was published in the Daily Standard of St. Catharines, and occupied, with additional information about the work of the society, over five columns. The membership of the society last year was six hundred and seventy-five, the second largest in its history.

The society will hold a rose show this year as usual, and will continue the gratuitous distribution of aster seeds to the pupils of the schools who desire to accept them. Last year the society supplied a quartette of gladioli bulbs at the normal price of five cents per set, although it cost the society nearly three times that amount, to nearly one thousand pupils. There is not an option among the fifty-four offered by the society which would cost from one dollar twenty-five cents or two dollars if bought in the ordinary retail manner.

BARRIE SOCIETY IS GROWING

The Barrie Horticultural Society is offering ten options this year. During the past five years the membership of the society has increased from sixty-three in 1907 to two hundred and seventy in 1911. This year a membership of four hundred is aimed at. Prizes are to be awarded as usual for window boxes, flower beds, lawns and boulevards. The annual flower show will be held in the Town Hall in August or September. Last year the society paid about twenty per cent more than the town grant in prizes for lawns, boulevards, window boxes and flower beds, and returned to the members in premiums more than the value of their fees, besides giving generous prizes at the flower show.

ACTIVITY IN TORONTO

The High Park District Ratepayers' Association of Toronto, which this year is affiliated with the Weston Horticultural Society, has decided to donate prizes this year consisting of trophies, shields and medals, for the best kept lawns and gardens, and for the best specimens of flowers and flower gardens. The district has been divided into sub-divisions, and separate prizes will be offered in each sub-division. The districts comprise a territory of four square miles.

MONTREAL SOCIETY

During February and March the proprietors of a number of the finest conservatories in Montreal opened their conservatories to the members of the Montreal Horticultural Society and their friends on certain days and dates, a list of which was sent to all the members. Among the conservatories thus opened were those of Sir Wm. Van Horne, Hon. Senator Mackay, R. B. Angus, Esq.; Chas. B. Gordon, Esq.; Sir Montague Allen, Lt.-Col. Frank S. Meighen and a number of others.

YOUR CROPS

can get more nitrogen out of one single sack of

Nitrate of Soda

than out of a two-horse wagon-load of manure. The Nitrogen in Chilean Nitrate of Soda is 100% available and is *immediately* so the day you apply it! It produces

More powerful growth and healthier, bigger plants. Easy to handle, clean, cheap, odorless, free from fillers.

Write to us for valuable free literature on the crops that mean a living to you. A post card will bring it to you.

Dr. William S. Myers Director of Chilean Propaganda **17 Madison Ave., New York**

NO BRANCH OFFICES

Take A Scoopful Of Each— Side By Side

Take "St. Lawrence" Granulated in one scoop—and any other sugar in the other.

Look at "St. Lawrance" Sugar — its perfect crystals — its pure, white sparkle— its even grain. Test it point by point, and you will see that

Absolutely Best St. Lawrence Sugar **Absolutely Pure**

is one of the choicest sugars ever refined—with a standard of purity that few sugars can boast. Try it in your home.

Analysis shows, "St. Lawrence Granulated" to be "99 99/100 to 100% Pure Cane Sugar with no impurities whatever"

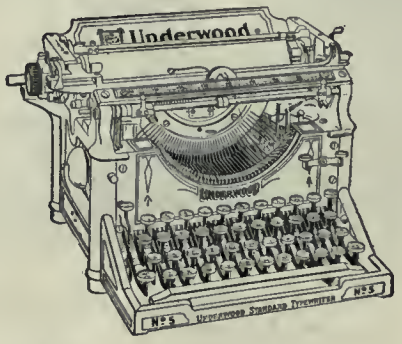
"Most every dealer sells St. Lawrence Sugar."

THE ST. LAWRENCE SUGAR REFINING CO. LIMITED, MONTREAL.

65

Some History

about *Typewriters*



Modern and Ancient

CHAPTER 10

IT is regrettable that during the past few years not everybody who wanted an Underwood could get one just when he wanted it.

THERE are not enough to go round, not even with the largest typewriter factory in the world—turning out over 400 machines a day.

THE Underwood output is nearly twice as large as that of its nearest competitor, which has been on the market for nearly 35 years.

IT is not by accident that the Underwood Company has in a few years built up this enormous busiuess.

IT is the logical result of selling the best typewriter at a price consistent with its value, and giving customers the best service ever attempted in the typewriter business.

United Typewriter Co.
Limited
TORONTO

PROVINCIAL NOTES

Nova Scotia

A report issued recently by the Dominion is as follows: "The total production of apples in Nova Scotia last year was variously estimated at from one million to one million and a half barrels, and that the larger estimate was not very far wide of the mark is shown by the fact that the total quantity shipped out of the province to date is approximately 1,300,000 barrels, and shipping is proceeding steadily each week. In view of this record crop—twice as big as in any previous year—growers, shippers and transportation companies are to be congratulated on the manner in which the fruit was handled and distributed among the various markets in Canada and abroad, including Ontario, Quebec and the Northwest, United States, Great Britain, Germany, the Netherlands, South Africa, Newfoundland and the West Indies."

An interesting meeting of the Berwick Fruit Company was held on Tuesday evening. The comparative merits, from a financial standpoint, of different varieties of apples, and the home manufacture of lime-sulphur spray were among the topics discussed. Mr. Percy J. Shaw, Horticulturist at the Agricultural College at Truro, gave an address, detailing the life history of the pests for which spraying is most important, and laying down the rule that these pests must be attacked at the weakest stage of their career.

A series of very successful fruit meetings were held in Kings and Annapolis counties during the latter part of March and first week of April. The principal speaker was P. J. Carey, Dominion Fruit Inspector.

Quebec

Auguste Dupuis, Director, Fruit Experiment Stations

The winter was very cold, but the fruit trees have not been damaged. Fruit buds are sound. East of Quebec City, snow has drifted into the orchards, and the damage to trees is great. Even to-day (April 15) snow is piled seven to eight feet high along fences and rows of trees, and about two feet in the middle of fields. Still we are not discouraged as we have organized for a general pruning and trimming of fruit trees.

This season more orchard owners will receive sound education in fruit-growing in all parts of the county than ever before. Lectures were given last winter by practical men in every parish and village, and they were attended by most farmers and their wives. Several priests allowed the meetings in the churches, and they induced the farmers to join the horticultural society. In one parish one hundred and fifty-two subscribed on the spot.

Last year our society sprayed ninety-two orchards and had them pruned partially. The result was very good. The apples were nice and clean, without worms in those orchards, whilst the apples were wormy and scabby in the adjoining orchards unsprayed.

The horticultural societies of Kamouraska and Lislet Counties have four hundred and sixty more members than usual. Every orchard will be visited, pruned and sprayed by government experts. Demonstrations of planting, grafting and lessons in culture

and modern management of orchards will be given by qualified instructors by the order of Hon. J. E. Caron, Minister of Agriculture, whose solicitude in favor of fruit-growers is not surpassed.

The spraying outfits and the insecticides were lately bought by us from firms who advertised in THE CANADIAN HORTICULTURIST, our best guide in the fruit industry. I will report the results of our demonstration work next fall.

Huron County, Ont.

The most striking development of the last few years in this lake shore district, according to a local paper, The Signal, is the increased attention given to apple-growing. It has long been known that this district produced fruit of a superior quality, but for one reason and another no special attention was paid to the possibilities of orchard cultivation and the business side of the orchard was almost wholly neglected. A change has come, however, and now every owner of a few acres of orchard is able to command a much better price for his farm. Orchards that for years were neglected are now receiving the attention that is due to the best-paying department of the farm, and many new orchards are being set out. In a few cases farms are being devoted exclusively to fruit-growing, and the number of these fruit farms will steadily increase.

One reason for this change in the attitude of the farmer towards his orchard is found in the success that has attended the apple-growing business in other parts of the country—in districts that cannot begin to grow apples like those of the Huron lake shore district. In these other districts the growers have found that by paying proper attention to the pruning and spraying of their trees and to the marketing of their fruit in good condition they can make splendid profits; and with the superior conditions of climate and soil in the Huron district even better results can be obtained here.

There are object lessons right at hand, too, which have opened the eyes of orchard-owners. Those of the Huron fruit men who first realized the money-making possibilities of the business, quit playing with their orchards, and turned their attention seriously to fruit-growing for profit, have had such success that, as has already been suggested, every fruit tree on a farm is now counted a distinct asset to its owner. When a clear profit of one hundred and sixty-five dollars eighty cents an acre can be obtained from an apple orchard of ten acres, as reported by one of our Huron growers, and when a company is willing to take old orchards on lease at twenty-five dollars an acre, expecting to make a profit after spending large sums in putting the orchards in fair condition after years of neglect, as a British company is doing in this district, then it is realized that what one man can do others can do, and that orchard cultivation is a highly profitable business. A case was reported in these columns some months ago in which an old plantation of an acre in extent, containing thirty-five trees, mostly Spies, had given as high as eighteen dollars a tree even at the low price of one dollar fifty cents a barrel, or six hundred and thirty dollars for the acre.

The market for apples is unlimited. Great Britain, Western Canada, the United States and other countries take all the good apples that can be grown, and ask for more. Indeed, all signs indicate that apple-growing will be more and more profitable, and that our lake shore district will in a few

SLUG-SHOT

USED FROM OCEAN TO OCEAN for 30 years

SOME SEEDSMEN WHO FOR UPWARDS OF 20 YEARS HAVE SOLD SLUG-SHOT IN CANADA:

Chas. E. Bishop, 31 Bridge St., Belleville, Ont.
Steele Briggs Seed Co., 130 King St. East, Toronto, Ont.
Jas. B. Hay, Brantford, Ont.
Adams & Tanton, 115 King St., London, Ont.
Kenneth McDonald, Ottawa, Ont.
A. E. Cameron, Brockville, Ont.
J. A. Simmers, Seedsman, 143-145 King St. East, Toronto, Ont
Wm. Smith, 10th Line East, Petrolea, Ont.
Darch & Hunter Seed Co., 119 Dundas St., London, Ont.
Wm. Ewing & Co., 142-144 McGill St., Montreal, Que.
Robt. Kerr, 10 Ainslee St., Galt, Ont.
Patrick Ross, Market Square, Woodstock, Ont.
George Keith, 124 King St. East, Toronto, Ont.
Graham Bros., 53-55 Sparks St., Ottawa, Ont.
Wm. Rennie & Co., Winnipeg, Man.
J. A. Bruce & Co., 47-49 King St., Hamilton, Ont.
Dupuy & Ferguson, 38 Jacques Cartier Sq., Montreal.
Wm. Rennie & Co., Adelaide and Jarvis Sts., Toronto, Ont.
Wm. Rennie & Co., 190 McGill St., Montreal, Que.

SAVES CURRANTS, POTATOES, CABBAGE, MELONS, FLOWERS, TREES AND SHRUBS FROM INSECTS

Put up in popular packages at popular prices. Write for free pamphlet on Bugs and Blight, etc., to

B. HAMMOND, FISHKILL-ON-HUDSON, NEW YORK

INTERNATIONAL

3 FEEDS FOR ONE CENT

WE POSITIVELY GUARANTEE

that a 25-pound pail of

INTERNATIONAL STOCK FOOD

will save you $7.00 worth of Corn or Oats

Because it promotes digestion and assimilation and enables you to cut down the grain ration 15% to 25% and still get better results. The saving of grain represents a saving of good hard cash to you.

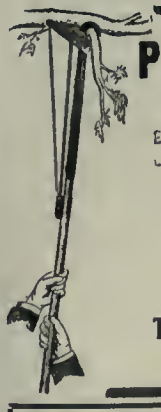
WE WANT YOU TO FEED 100 LBS. AT OUR RISK

¶ It will not cost you a cent if you are not satisfied. See our dealer in your town or write us for particulars. Mention this paper and the stock you own and we will send you a litho, size 16 x 22, of our three champion stallions.

Read what James L. Hill, of Fredericton Junction, P.E.I., wrote us on February 15th:

I think International Stock Food is a great thing for stock. We wouldn't be without it for anything. It keeps our horses in fine condition; in fact, every person admires them, they have such a glossy skin and always look well. We give it to young calves and pigs and find it agrees with them splendidly, and the Poultry Food shows itself in a very short time. Our hens have been laying most of the winter. I cannot say too much for your food for all kinds of animals.

INTERNATIONAL STOCK FOOD CO., Limited - - - TORONTO



Pruning Means Money. Easy Pruning Saves It

Every hour spent in pruning your Orchard before the blossoms start will return you solid profits in the increased amount and value of your Fruit But you should not needlessly waste ttime in pruning by old-fashioned methods and tools. The work can be done in one half the time with the

KANSAS PRUNING KNIFE

Just put the hook over the limb and pull the handle—that's all. Will do your heaviest work, and will do it neatly and as quickly as a man can work

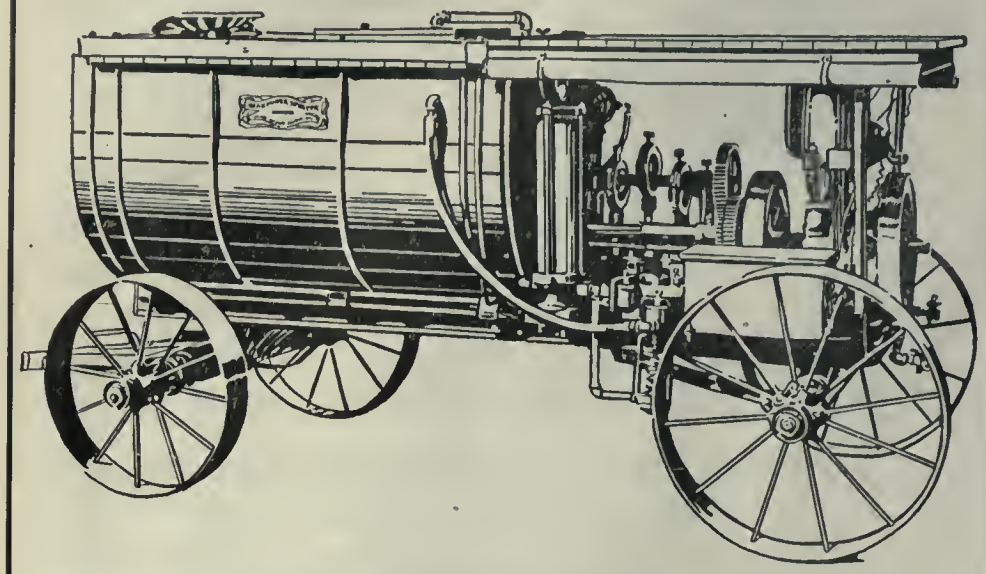
THE INTERNATIONAL TOOL CO. 49--51 PORTER ST., DETROIT, MICH.

Canadian Manufacturers---TAYLOR-FORBES CO., Ltd., Guelph, Ont.

12,400

That is the number of copies of this number of The Canadian Horticulturist actually printed. Of these considerably over 11,500 will go to regular subscribers. The balance will go to advertisers, correspondents and new subscribers received during the month. No free samples except to those who ask for them. At our present low rate (which is to be increased August 1st) The Canadian Horticulturist offers advertisers exceptional value. Yearly contracts accepted NOW at present rates. Write for particulars.

Power Sprayers



Giant Power Outfit

GIANT POWER OUTFIT.—This is a three-cylinder pump of great strength, power and capacity. It will spray 9 gallons per minute at 300 lbs. pressure, if desired. It can be operated with either a 2½ or 3½ H.P. Engine.

NIAGARA POWER OUTFIT.—A three-cylinder pump of slightly less capacity, but the same high pressure. Can be operated with a 2½ or 3½ H.P. Engine.

DUPLEX POWER OUTFIT.—A two-cylinder pump, medium priced, but with large capacity and high pressure. Operated with either a 1½ or 2½ H.P. Engine.

All our pumps have porcelain-lined cylinders, so are proof against corrosion. These cylinders are guaranteed for 10 years.

These pumps are very strong, very simple, and built for large capacity and high pressure.

All parts are interchangeable. Repairs cost practically nothing. Every part fits every other, and they can be immediately supplied.

All our power outfits are mounted on steel frames, which can be attached to any wagon.

They are equipped with 150 and 200-gallon tanks with rotary agitator.

Tank Filler, which works by pressure, and will fill the tank in 6 to 8 minutes.

Steel folding tower. By removing one tail nut this tower folds flat on the outfit.

The highest grade of hose. Guaranteed to stand 300 lbs. pressure during the entire season.

Spray Rods—lined with large sized aluminum tubing.

Latest approved nozzles and other accessories.

We have hundreds of power outfits working in Ontario, and wherever we have a power outfit, we have a satisfied customer.

We have great confidence in these pumps and want to demonstrate them to you.

We will pay the expenses to our factory of any fruit grower in Ontario who intends to purchase a power outfit, and who will inspect our pumps before he places his order. He will be under no obligation to purchase from us. All we ask is that he purchase a power outfit of some kind.

HAND PUMPS: MAGIC No. 9, is the largest hand pump made. One man can easily maintain a pressure of 140 lbs.

LITTLE GIANT No. 70—Most powerful barrel sprayer on the market.

THE PIPPIN No. 50 is a strong barrel pump, made for smaller orchards.

Write for our complete illustrated catalogue.

Be sure and see these pumps before placing your order.

They are made with all troubles left out.

NIAGARA BRAND SPRAY CO., Limited

Burlington, Ontario

years be one of the leading centres of orchard industry on this continent.

One of the most pleasing features of the development of the orchard business here is the fact that it is engaging the attention of young men of character and ability like Mr. Andrew Rougvie, Mr. R. R. Sloan, Mr. D. F. Hamlink and others

British Columbia

During the past few weeks several of the cooperative fruit growers' associations have been holding their annual meetings and preparing plans for the coming year. There are a number of very successful organizations in the province. The principle of co-operation has become firmly established although a few of the fruit unions are still handicapped by a lack of sufficient capital.

The annual meeting of the shareholders of the Okanagan Fruit Union, Limited, was held in Vernon, and resulted in R. H. Agur being elected president, W. C. Ricardo, vice-president, and J. Kidston, managing director. The directors' report showed that sales had been made throughout the season at the best wholesale prices going, although, owing to the prevalence of disease in nearly all classes of fruit, many allowances had to be made. The growers received the average price realized for each grade less only the actual cost of packing and handling, and a ten per cent commission for marketing. Owing to the turnover for the year having been less than was anticipated there was a considerable deficit on the year's operations. It is anticipated that the operations of the union this season will be more successful. The directors recommended that the union this year require growers to sign contracts to have the whole of their crops handled by the union, and that growers who desire to ship through the union must become shareholders.

The Kooteney Fruit-Growers' Union will continue operations this year. An effort will be made to secure additional capital as the union made the mistake of starting operations with too small a capital. Some of the largest fruit-growers in consequence have held aloof from the union, fearing that they might not obtain full returns for their fruit. The manager will make a tour of the district covered by the union to secure the additional capital required. Local associations are to be formed to ensure uniform loading and packing.

The report of Puyallup and Sumner Growers' Association for the year 1911 showed an increase of about $90,000 in the volume of business over the year preceding, and net profits for the year of $8,051.

Strawberry Plants

FOR SALE

Choice Plants at reasonable prices. We have Early Ozark, Fendall, Barrymore, Silver Coin, Pocomoke, Aroma, etc., of newer varieties.

We also have Dunlop, Williams, Warfield, Brandy Wine, Bederwood, William Belt, Glen Mary, etc., of the old favorites.

Our free list tells all about them.

Order early as plants are scarce.

Ontario NurseryCo.

Wellington, Ont.

The Canadian Horticulturist

Vol. XXXV JUNE, 1912 No. 6

Summer Spraying

R. J. Messenger, Bridgetown, N. S.

ALL men know, and a few practically realize, that any work thoroughly done gives better results than the same work carelessly put through. This knowledge should be applied to the work of spraying.

THE BUD MOTH

The bud moth is the earliest insect we are up against in Nova Scotia, and for many years we have felt that we had his life history down pat as well as the means necessary to combat him. But now our scientists are working hard to upset old theories and recommend new ones as well as new practises, and we very soon will be viewing the bud moth from another standpoint, and accomplishing his destruction in a different manner. My reason for the doubt expressed is that one of our new scientists stated to me recently that our early spray was for the bud moth. Certain it is, he is a destructive little wretch, and we have felt that his work was of sufficient importance to warrant the necessity of a strongly poisoned spray early in the season just as the fruit buds were swelling or as the warm days come.

The bud moth is alive all winter as a small brown worm with a black head. He hides himself under a little rubbish in the axil of a bud or the angle between the twig and the bud. He bores a very small hole into the blossom and eats out the vital part, and later emerges and rolls himself in the leaf that has opened.

The fact that the hole he makes in entering the bud is small is the reason we want a strong spray thoroughly applied on those buds when the little fellow leaves his winter quarters. At least! so scientists of the last decade and experience have taught us, and this spray generally is applied in May from the fifth to fifteenth.

Our other enemies in Nova Scotia are brown tail moth and canker worm, of which we have just finished a cycle. A little codling moth and a few lesser enemies all controlled by the later sprayings with which we will deal, and the great enemy of growers who want clean-skinned fruit—the apple scab fungus.

MATERIALS TO USE

In the use of materials also, we are transitory and know not what a season may bring forth. Outside of the great mass of trash of a proprietary nature that is constantly being brought to the notice of the public, and which no intelligent orchardist bothers with, unless it is strongly recommended by our experiment stations, there are two principal mixtures of fungicidal value. These are the old bordeaux, which we all know how to mix, and the newer lime-sulphur, which none of us liked to mix before we got the commercial ready-to-wear stuff. Now the strain of spraying has shifted from our muscles and time to our pockets and we save the former and pay the other fellow to prepare our material.

Men are like sheep, and it only needs a little recommendation from men who may be financially interested to draw after them the whole unthinking flock in a scramble after the new thing. We all like to be popular, but still I would not condemn our old friend bordeaux, even if many lay the russetting of fruit at his door. In any case, I shall use bordeaux for spraying potatoes, and we may not find in lime-sulphur, after ten years' unprejudiced use, the bonanza it appears at present. By buying it in commercially prepared form much-wanted time is saved and we will use it for a while at least. For dormant spraying, we use of the commercial preparation, such as is sold by the Niagara Spray Company, about one gallon to ten of water. For the later sprays, about one gallon to thirty or forty of water.

A Power Spraying Outlit suitable for use in Large Orchards and on Tall Trees

USE OF ARSENATE

For insecticides, the only spray strongly recommended is arsenate of lead on the ground that it is harmless to the foliage and yet kills the bugs. It is also found to increase the fungicidal properties of the lime-sulphur with which it is mixed. In my own experience it is not extremely harmful to anything except the orchardist's pocket, and unless severely agitated it settles to the bottom of the cask and stays there. However, its expense spells profit to the sellers, and the former are always legitimate prey. It is safe and won't burn your trees. It is mildly active, and if you put it in in sufficient quantities to allow for what settles to the bottom of the cask and give the bugs a good feed, you will be doing the popular thing, and no one will criticise. In the meantime, we realize that we have not attained the perfect spray mixture. After two years' experience, I am strongly tempted to go back to the bordeaux and the quick-acting, sure, inexpensive, and if intelligently used, non-

A Western Irrigated Orchard in Bloom

injurious to foliage home-made arsenite of soda, as an insecticide to add to the fungus-destroying bordeaux. As this is an article on summer spraying, it should contain the information that summer spray should contain: Commercial lime-sulphur 32B, one to ten gallons of water; arsenate of lead, three-quarters of a pound to ten gallons of water.

THE APPARATUS

Use a pump of sufficient power to give a fine spray from the nozzle. If a hand pump is used, have the handle long, the cylinder large, the strainer fine, the intake pipe of good size—any other packing except cotton wick—a large air chamber, and a good strong half-inch hose. A quarter-inch hose loses too much power through friction. It would be all right on a power pump. I have used and seen used about fifteen different makes of nozzles, and the best, in my opinion, is the aluminium nozzle, sold by the Niagara Spray Company. It is light, effective, of great delivery, and with sufficient power to make a fine spray.

HOW TO APPLY

Spray may be applied on any day, in any kind of weather, and a given area finished at once, and all this work may be done from the platform of a wagon; but these conditions do not attend thorough spraying. I submit that a tree cannot be thoroughly sprayed at one time, with the wind in one direction, though we often try to do so. An orchard should be sprayed on one day with the wind, and three-quarters of the tree sprayed. It is not impossible to find in any week the wind in such a direction that the remainder of the trees can be sprayed. The spray should go into the tree from the ground as well as from a wagon. A fine dry day, with a slight wind, is the best for spraying. A bent connection at the nozzle will allow the spray to be easily directed by turning the rod.

In the application of lime-sulphur, some advocate the use of coarse nozzles and an abundance of spray to wet the whole tree and surrounding country. As this seems to be uselessly expensive and not really as efficient as a fine mist, I try to get the latter and give the foliage a good coat of spray that will stick and dry.

We generally give three applications during the summer, besides the one in early May. One is given just before the blossoms open. This keeps in check the hunch caterpillar, canker worm, and brown tail moth, if any winter pests have escaped, as well as the black spot fungus.

One spray is given as the little apple forms and while it is yet sticking its calyx into the air for the codling moth and black spot. The third is given about two weeks later, if there is wet, muggy weather, for black spot. I am aware that the foregoing is not all orthodox, but it might excite criticism and thought, the latter being the most important thing on earth.

What Cultivation Shall I Give My Orchard?

T. G. Bunting, Central Experimental Farm, Ottawa, Ont.

(Continued from May issue)

AN excess of water in the soil at any time is never advantageous to trees, but rather injurious, and should be removed by drainage, as before stated, and the sooner the water is removed in the spring the better, for then cultivation can begin, and after it begins it is desirable not to have any great loss of moisture other than that which is taken in through the roots of the trees. Each rain will destroy this soil mulch, so then cultivation should be given as soon after each rain as possible in order to restore this mulch.

During a dry period, or a prolonged drought, the soil mulch will largely lose its efficiency if not renewed at intervals of from ten days to two weks. Therefore, during the season of two or three months, ranging from say the middle of April to near the end of July, it will be necessary to cultivate as soon after each rain of consequence as possible: These cultivations should be as frequent during this season as every ten days or two weeks whether there is rain or not.

FREQUENT CULTIVATION

This will mean that the orchard will require to be cultivated from five to seven times during this period. The first cultivation will quite likely be by means of the plow, or if the land is in very good condition the disc may be used to advantage. The depth of plowing will depend on the accustomed depth of plowing in the orchard, and it should never be much deeper than four inches, and preferably between three and four inches.

Some, in using the disc, will cultivate just as shallow as they possibly can. The following cultivations may be by means of the disc, acme harrow, or any of the spike or spring tooth harrows, but it is a good plan to use the disc harrow occasionally as this tends to loosen up the soil more than the other harrows referred to. Some, I know, will think that this is more cultivation than is necessary in the orchard, but if they turn to the methods followed by the best fruit growers they will see that this method is being followed because it pays.

COVER CROPS

The object of ceasing to cultivate the orchard by the end of July, or at least the first of August, is because the growth of the tree has been completed by this time and there should now be an ample supply of plant food for the trees' requirements during the balance of the season. This also affords us an opportunity of sowing a crop to serve as a cover in the orchard during the fall and winter, and besides, the crop so sown takes up the available and surplus supply of soluble plant food, and holds it until the following spring, when the cover crop may be turned under and on decaying the plant food will again become available to the trees. At the same time we are increasing the supply of organic material in the soil which plays a very important part in the soil reactions, and if legume crops are occasionally used we can increase the supply of nitrogen, which is the most valuable and costly element that is required by the orchard.

If we faithfully cultivate as we should for the above two reasons, we will never be troubled seriously with weeds in the orchard. Even should the orchard be full of twitch or couch grass it can be got rid of in a very few years by the careful following up of this cultivation

in the early months of the season and then by smothering it in the fall by the use of a cover crop such as rape or hairy vetch, which makes a rank, dense growth during the fall months.

CULTIVATION THE BEST

In regard to sod versus cultivated orchards the advantages that the cultivated orchard has are pretty well understood. The great majority of profitable orchards are cultivated. The best advice to follow if one has a good, profitable, bearing orchard in sod is to leave it as it is, for there would be no good reason in changing to cultivation, and in changing from sod to cultivation one might easily lose one or two seasons' crops. If the sod orchard is unprofitable and not in a good, thrifty condition, change to cultivation, and by the use of manure and cover crops it can soon be brought into a profitable condition. It is safe to say that in future plantings that are properly handled, the method followed will be cultivation right through the life of the orchard. Were cultivation systematically followed from the beginning of the orchard we would have a much larger number of annual bearing orchards. It has been amply demonstrated in the west by many growers, and also in the east, particularly in the orchards of Mr. B. J. Case, of New York State, that orchards should bear annually profitable crops, and these crops are secured chiefly by the methods of good cultivation adopted.

Some growers are often discouraged, for after giving one season's good management in this respect they do not get the results they anticipate the following year; but this is not to be expected, for it usually takes from two to three or more years of good cultivation to get the orchard into good bearing.

The Value of Bees in the Orchard

Morley Pettit, Provincial Apiarist, Guelph, Ont.

THOSE who have driven a horse and cultivator close to the hives in the orchard may say their value is negative. Nervous fruit pickers wish them on the other side of the fence; but the observant grower considers bees a necessity in the orchard during the blooming period, even if the hives are placed elsewhere.

By persons of a poetic turn, bees have been called the "Marriage Priests of the Flowers," because they bring together those opposing elements which produce fruit and do it more effectively than any other agency.

There are three media by which pollen is carried from flower to flower. Water operates in the case of certain aquatic plants . Wind does duty for such trees as pines. Animal life, principally insects, do this work for the flowers which produce the orchard fruits. Take a simple illustration: At the Maryland Experiment Station, a Grimm's Golden apple tree of medium size and very symmetrical was taken just before the blooming period and divided into three equal portions. One-third of the tree was covered with muslin to exclude all insects and wind; one-third was covered with mosquito netting to keep out insects and admit wind; the remaining one-third was left open to admit both wind and insects. The tree was kept covered in this manner during the entire blooming period. The part covered with netting set one apple. The part left open set nine apples. The observer did not report on the part covered with muslin; but from our own and other experiments, we should judge that it was barren.

Comet Red Currant—Fig. 1
Note absence of fruit.

An Unprotected Bush—Fig. 2
This bush produced an excellent crop of fruit.

Each fruit blossom offers a double invitation to the insect. Showy petals attract the eye, and aromatic nectar invites the appetite. Honey bees accept most readily and are most welcome. They are more valuable than others for several reasons:

First, nature compels them to seek food in the hearts of flowers, because they cannot secure it elsewhere. Besides water and a little salt they eat nothing but honey and pollen. Even when other sweets are offered them they only eat it when no nectar is to be found in the flowers.

Cox's Pomona—Fig. 3
Insects were excluded from the branch to the right and it bore no fruit.

Second, their bodies and legs are comparatively large, and thickly covered with branched hairs, making it impossible for them to reach the nectar of the blossoms, without carrying away on their persons the pollen which will be distributed on the next blossom they visit.

Third, their numbers in the orchard can be controlled. Wild bees and other insects may or may not visit the orchard, depending on the season and the weather. Bees can be protected through a severe winter and they can be hived in sufficient numbers where they will do their work. In catchy weather wild insects seldom visit the orchard, but one hour of sunshine brings out the bees and sets them buzzing thickly on the nearest flowers.

WHAT INSECTS DO

To show the value in the orchard of insects, of which I have shown that hive bees are chief, I cannot do better than tell the story of the accompanying illustrations, taken from the British Journal of the Board of Agriculture, March, 1911. Professor W. B. Little, instructor in horticulture, Armstrong College, Newcastle-on-Tyne, tried the experiment on two Comet red currant bushes, which were alike in every respect, except that he covered number one with netting during the blooming period to exclude insects; and left number two exposed. Insects worked freely on the blossoms of

Early Victoria—Fig. 4
The middle branch was not protected from insects until after pollination had taken place, and this branch produced well-developed apples.

Reaulta of Experiment in Pollination at the Oregon Experiment Station

On the left are shown some self-pollinated Newtons that produced at least one-third of the apples under sized. On the right are some Yellow Newtons that were pollinated with Grimes Golden. There were no small apples.

number two, but of course were unable to touch those of number one. As will be seen by the illustration number one grew a profusion of leaves and no fruit. Number two was heavily laden with luscious currants. He tried a further experiment with apple trees. Figure three represents a tree of the variety "Cox's Pomona." The branch to the right of the illustration was covered with netting to exclude insects from the blossoms, and as a result bore no fruit. Lest some one might say that the covering prevents development of the fruit he took the tree illustrated in figure four, variety "Early Victoria," and left it all exposed to insects until immediately after the blossoms had been pollinized, then the branch in the middle of the illustration was covered with netting in the usual way; but the deed was done—the bees had fertilized the blossoms, and the fruit developed quite as well as though the netting was not there.

At the Oregon Agricultural Experiment Station, C. I. Lewis and C. C. Vincent tried experiments to show the value of the cross pollination by insects over self pollination, of apples. The illustration showing the result of their experiment requires no explanation.

A student of the Ontario Agricultural College, P. C. Dempsey, wrote his graduating thesis on the results obtained by careful investigation in the old Bay of Quinte Experimental Station orchards, near Trenton, in the season of 1910, the object being to ascertain the importance of cross pollination, and the best pollinizers for the Spy in this district. The system followed was that of bagging the clusters of blooms just before they were ready to open. Bags were tied over the fruit spurs and blossoms and left until the danger of other fertilization was over. The blossoms so bagged were left to fertilize themselves. As soon as danger of cross fertilization was over the bags were removed. The number of clusters setting fruit, and the number of fruits set were counted and a record kept. Apples were counted as set when they reached a diameter of five-sixteenths of an inch, and gave every indication of reaching maturity. After danger of June drop was over, and the apples had reached a little better than the half grown stage, the apples resulting from the self pollinized flowers were tied up in small mosquito netting bags to prevent loss. As the variety reached maturity the fruits maturing were again counted and checked off.

Of the seven thousand and forty-five blooms bagged, two hundred and forty-eight flowers set fruit, while only nine apples matured from the whole number. The great loss of small apples set was during June and July, which seemed to indicate that June drop may be caused by self pollination.

Mr. Dempsey very aptly concludes that these results indicate clearly the need of insects for the pollination of orchards; for while some varieties can produce apples with their own pollen, a very small percentage of bagged flowers set fruit; whereas, on the other hand, flowers exposed to insects set and mature from thirteen to twenty per cent., which makes a good crop.

There are two hard, solid facts I would leave with fruit growers in this connection. The first is well recognized—the necessity of insects for the production of well developed fruit. The second may not have been presented in just this light. It is that hive bees, which are good for the purpose, can be placed in the orchard in sufficient numbers to ensure the work being done. Fruit growers who make no provision for bees in their orchards, and growers who trust to luck for help to pick their fruit, are in exactly the same class. If they get a good set of fruit and get it properly picked it is not the result of their own business organization.

Refrigeration in Relation to Fruit Growing*

J. A. Ruddick, Dairy & Cold Storage Commissioner, Ottawa

It is one thing to keep apples merely from rotting and another thing to preserve them in that crisp, juicy condition which adds so much to their value and encourages large consumption. Some varieties may be preserved in ordinary storage as long as it is desirable to keep them but most of the standard varieties could be delivered to market in better condition and with less loss from decay if they were promptly cold stored after picking. I want to emphasize this point. It is of the highest importance that there should be as little delay as possible. A delay of one week between picking and storing will shorten the life of the apple even in cold storage by many weeks. This applies particularly to the early or quick ripening varieties.

Before we attempt to carry apples much past their regular season we must consider carefully whether we are likely to find a profitable market for them or not. It would not be advisable to carry some varieties into the season for others of superior quality, but choice dessert apples like the Fameuse and McIntosh Red, for instance, will always find a market if in good condition. I mention these two varieties because I have made careful tests with them more than once, and have had no difficulty in keeping them in perfect condition until April or even into the month of May.

The Gravenstein is a variety which responds to cold storage treatment. I do not know of any variety which is so much improved in carrying quality by prompt cooling after picking. The season for the Greening has been extended in New York State by at least two months. In the month of April, 1910, our Department sold two hundred boxes of Greenings in Calgary after keeping them all winter in cold storage. Although apples of the color of the Greening are not in demand in the western markets, these apples sold well because of their excellent condition. There was absolutely no waste, and the whole lot was sold in the original boxes as packed in the orchard.

The King is another variety which

*Extract from a paper read at the recent Dominion Frnit Conference.

does well in cold storage, especially if it is well colored and stored promptly. Always with that provison. In the fall of 1910 I procured twenty boxes from Mr. W. H. Bunting for the exhibition which was held in London in 1911. They were in perfect condition when shipped from Montreal in April last, and were reported as having kept exceedingly well several weeks later.

Cultivation and Size of Fruit

F. E. Ellis, B.S.A., Peterborough Co., Ont.

THERE is an intimate relationship between the amount of cultivation that we give our apple orchards and the size of fruit. Good size for the variety is an essential quality in a first-class apple that will produce "Fancy" or "No. 1." And this is the class that we are all aiming to produce. Mr. John Beemer of Brant Co., Ont., whose orchard we visited last summer, unwittingly performed an experiment that shows with remarkable clearness the relationship between size of fruit and orchard cultivation.

Mr. Beemer's regular orchard practice is to cultivate intensively until July, and then seed to a cover crop of clover, which is plowed down the following spring. Last spring, however, Mr. Beemer undertook to spray several orchards beside his own and was kept so busy that the cover crop was not plowed down in part of his own orchard, and at the time of our visit, on the first of July, there was a rank growth of clover in one-half of the orchard while the other half was being cultivated as usual.

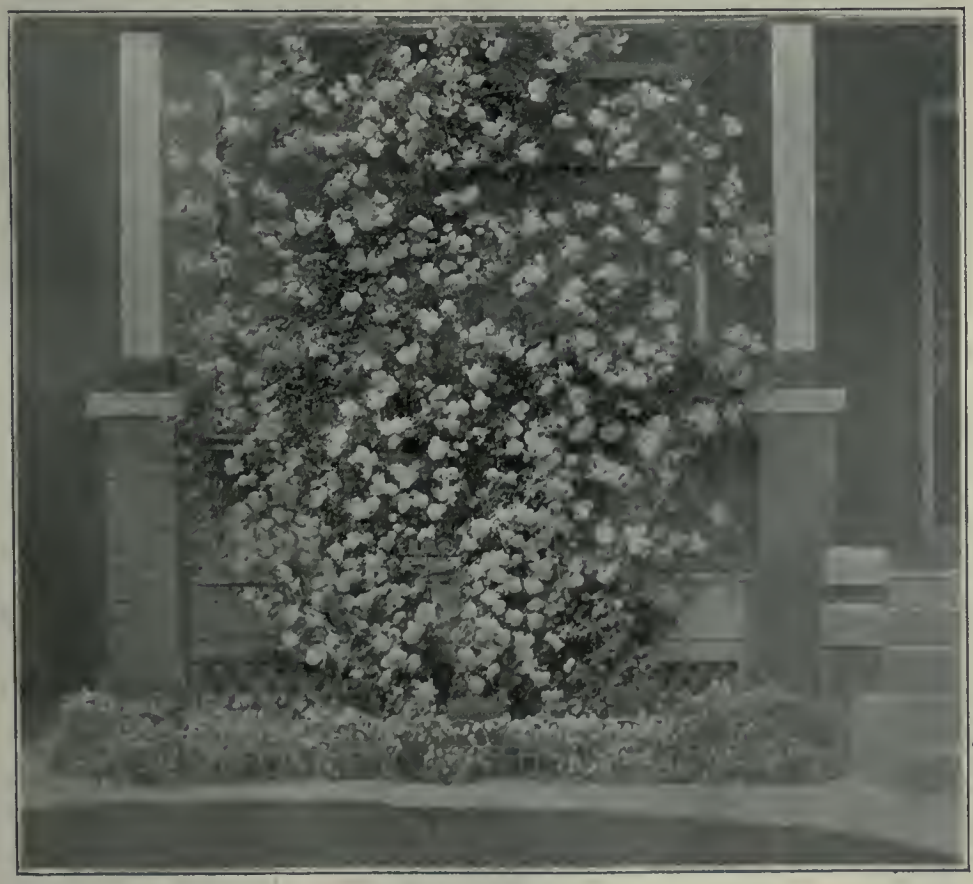
The applies on the trees in the cultivated portion were more than twice the size of those on the adjoining trees that were surrounded by cover crops. "The explanation," said Mr. Beemer, "is easy. That rank growth of clover has been robbing the trees of both moisture and easily available soil fertility ever since growth started. The food that should be devoted to producing me a good crop of apples is being used to produce a good crop of clover that will simply be plowed under."

LESS FRUIT SETS

Another serious loss that is almost sure to follow, will be a smaller setting of fruit the following spring. It is in the spring of the year that the fruit buds that determine the next year's crop are developed. Having the orchard in sod, or allowing the cover crop to grow as Mr. Beemer did, will interfere with the proper setting of fruit buds.

We believe in orchard cultivation. One cannot cultivate the orchard too frequently up to the first of July but after that, cultivation will be a detriment. It is then well to sow the cover crop in order that the fruit may mature and develop a good color. The cover crop by robbing the tree of moisture will also tend to harden up the wood to withstand the cold of winter.

There may be some soils that are so dry that cultivation the year round is advisable. On other soils unusually rich or moist it may be well to leave the orchard in sod for a few years. But with the most of us intensive cultivation in the early part of the summer, followed by a cover crop, will give us the best quality and the largest sized fruit.



A Three Year Old Dorothy Perkins Rose Grown by Mr. Hornshaw, 40 Simpson Ave., Toronto, Ont.

Sweet Pea Culture

W. T. Macoun. Ottawa, Ont.

As soon as sweet peas are well up they should be staked or trellised. Wire netting is quite satisfactory, and as it can be obtained much easier by city people than brush, it is most commonly used. Brush is unsightly, in our judgment, reminding one for a long time before covered with the vines of dead branches which should be removed. The trellis or brush should be at least six feet high, and if the soil is rich nine feet or more will be found necessary.

Sweet peas usually require little or no watering until they begin to bloom. In Ottawa where nearly every one has a hose and nozzle, and where holding these helps to keep one cool on a summer's night, I fear that too frequent watering is the rule, with the result that the plants are made soft and when conditions are favourable disease attacks them, or in other cases where the ground is very rich they run too much to vine. When sweet peas begin to flower they need an abundant supply of water, but it should be judiciously given.

The farmer and market gardener cultivates his soil in order to conserve moisture and let air into the soil and he gets luxurious growth without any artificial watering. In many cases the keeping of the surface soil loose on each side of the row of sweet peas will conserve sufficient moisture until well on in the summer without watering. Even when watering is done it is desirable to loosen the surface soil afterwards, as the roots of the plants require air as well as moisture.

WATER IN A TRENCH

In order to keep the stem of the plant hard, so that it may resist disease in the ground, we recommend watering in a trench about six inches away from the plants. The water soaks down, cooling and moistening the lower depths of the soil but leaving the surface of the soil about the stems fairly dry.

On some soils a very important assistance in the conservation of moisture and cooling of the soils is the mulch. This may be altogether of lawn, or, better

The Gardener's Lodge, Experimental Farm, Ottawa, Chrysanthemum Maximum in foreground

still, short, rotted manure over which are put lawn clippings. A mulch of this kind eighteen inches on each side of the row of sweet peas and two or three inches in depth will also prevent the surface soil from being tramped hard. While the mulch should come near the stems it should not actually come in close contact with them.

KEEP SWEET PEAS CUT

A thorough watering twice, or even once, a week is better than watering every day. It is scarcely necessary to say that no pods should be allowed to form if continuity of bloom is to be obtained. The peas should be cut every day or at most every other day. A difficulty most gardeners experience is to get the sweet peas kept cut as they should be. A short row kept well cut is much more satisfactory than a long row neglected. One row twenty to twenty-five feet long will more than keep a household supplied with flowers and even ten feet would give an abundance of bloom, and from this length it is not too great an effort for anyone to keep the peas cut, even in the hottest weather. Peas should not be pulled from the vines; they should be cut off with as much of the stem as possible.

Growing Dahlias

J. McP. Ross, Toronto, Ont.

The culture of dahlias is so simple, anyone may soon have a stock of dahlias by starting with a few tubers. Of course, like everything else, they respond readily to good care and liberal cultivation, by using plenty of manure, bone meal, nitrate of soda, and water.

As a rule, dahlias do better when the hot sun in the afternoon is shaded from them. The flowers last a long time if cut in the early morning or after sundown, placing the stalks in water and keeping them in a cool place.

Varieties that have been cultivated a great many years gradually deteriorate, becoming more or less single. All plants do this more or less, and this deterioration may account for the blighting of the young flower buds. This necessitates new varieties possessing vigorous habits of growth. To counteract this decay florists have to resort constantly to raising new sorts from seed. This restores the plant to its natural type.

A good guide for planting out very tender plants is to test the temperature of the soil. Unless the temperature of the soil is at least as high as 50 degrees it is better to keep them out of the ground a little longer. If the ground strikes cold to the hand when planting it is best to go slow with setting out very tender plants of any kind. It is better to let them harden well in cold frames where they can be protected, than to chill or freeze them in the border. Even should there be no actual frost, continuous chilly wet weather will often give them a set back they do not recover from until quite the end of the season.

DAHLIAS

Dormant roots of dahlias, or roots barely started, can be planted out of doors about the end of May. Roots that have been started indoors or in a hot bed should be hardened off gradually to outdoor conditions, the same as recommended for bedding out plants. The roots of these started early should not be planted out until about the first or second week in June after all danger of frost is over. The foliage of the dahlia is very easily touched by frost. Dahlia roots should be set about eighteen inches to two feet apart, if planted in rows Place a stake to each plant when set out, it sometimes means saving the plant from being broken off later for want of tying, something that often happens to the growth of dahlias. A fairly rich, light, loamy soil suits dahlias best.

The June Care of Flowers

Wm. Hunt, O.A.C., Guelph, Ont.

Chrysanthemum plants that have been grown indoors from cuttings or slips, or from divisions of old roots, in March or April, may be planted out in the garden, or potted into large pots, in rich soil in June. If potted treat them as you would geraniums in pots. These plants like plenty of water at the roots.

Stand old plants of Calla or Arum Lily out of doors in the shade in June. Do not dry them too much at the roots in the summer.

To have good geranium plants that will flower all winter, they must be prepared in the summer. The best plan is to secure some strong young plants of good varieties in June, in four or five inch pots. Re-pot the plants into six or seven inch pots. Pinch out the tips or terminal points of each shoot or branch so as to take off a very small piece of the stem as well as the topmost leaf or two. Keep the tip of each shoot pinched out as soon as it is six or eight inches in length until about the middle of August. Keep all bloom buds and blossoms picked off, stem and all, as soon as they appear until September, when the plants should be allowed to grow and flower.

After the plants have been re-potted in June, plunge or sink the pots to the rim out in the open ground in the garden. Put an inch or so of coal ashes underneath the pots when sinking them into the ground. This will keep out earth worms. Pot the plants in good rich potting soil and put in the bottom of each pot nearly an inch of broken flower pots, coal cinders, or gravel for drainage when re-potting them. Give them plenty of water during the summer.

Impatiens, or Bloom-for-Ever, will grow out of doors from June until the end of August. Plant them out about the end of June in light, rich soil in the open. Spray the foliage frequently to keep down red spider and other insect pests.

Old plants of begonias should be stood out of doors in partial shade during the summer.

Valotta and Amaryllis may also be stood out in partial shade from June until the end of August. If they require re-potting it should be done about the end of July. Do not re-pot them too often. A top dressing or mulching with good rich soil is often better than re-potting these plants.

Canadian Gardens--Picturesque "Inglewood"

Wm. Hunt, Ontario Agricultural College, Guelph

ARTICLE No. 6

THERE are few places in western Ontario that are more beautifully situated, or that have more natural beauty, than have the gardens and lawn of "Inglewood," in the city of Hamilton. Occupying as they do an elevated position several hundred feet above the level of Lake Ontario, on the steep incline of land leading close up to the cliff-like limestone formation of the Niagara escarpment, these grounds are naturally very attractive.

"Inglewood"—The House and Part of the Lawn

The panoramic view from the terraces on the lawn is strikingly beautiful. The lawn with its fringe of fine ornamental trees, through which can be seen glimpses of parts of the rapidly extending city, as well as of Hamilton Bay and the strip of land known as "The Beach," make up the foreground of a very beautiful landscape picture. The town of Dundas nestled below the high hills to the west, and the thickly wooded heights of East and West Flamboro, and as far eastward as the eye can reach over the blue waters of Lake Ontario—even as far east as the city of Toronto—form a background to the picture of which words will utterly fail to convey anything like an adequate conception. The scenic beauty unfolded to the eye from the points mentioned can scarcely be equalled in Canada. The view is still more extensive and beautiful when seen from the cupola and promenade platform on the top of the residence, or from the top of the cliffs or mountain to the south of the residence.

The residence itself is a fine stone structure of the Gothic style of architecture, its spacious verandahs, and the stone sculpture work that adorn its walls being prominent features of its architectural beauty. Members of the Royal Family who have visited Canada, as well as almost all of our Governor-Generals, have been hospitably entertained within its walls at various times in its history.

It is, however, of the lawns and gardens that I am expected to write about, so that I must not linger over scenes and incidents, many of which the writer was closely interested in. The latter statement will, I trust, be sufficient excuse to my readers for this slight deflection from the subject proper of this article.

THE APPROACH

The residence is approached by a winding carriage drive, from which almost the whole vista of the lawns can be seen through the openings between the fine ornamental trees and shrubs growing along its edge. Among these last-named are to be found magnificent specimens of the Liriodendron tulipifera (Tulip Tree), Catalpas, Flowering Chestnut, Double-flowering Peach, and others, and a splendid specimen, upwards of fifty feet in height and almost as much in breadth, of the double-flowering Chinese Cherry (Cerasus sinulata). This beautiful specimen is, literally speaking, a huge pyramid of pure white, and a landmark that can be seen for several miles, when it is in full flower. It is a pity that this kind of tree is not more hardy than it is. It seldom succeeds well outside of the Niagara district on this account. The tree in question was planted about sixty years ago, soon after the residence was built. The ice storm that played such havoc with the telephone and telegraph wires some twenty years ago in Hamilton damaged this fine old tree very materially. Since then it has never flowered as luxuriantly as before.

SOME FINE TREES

The irregular fringe of trees skirting three sides of the five or six acres of lawn must not be forgotten. The groundwork of this beautiful belt of trees is made up of fine specimens of the Norway Spruce, many of which are upwards

A Portion of the Lawn and Flower Beds at "Inglewood"

of sixty feet in height. Interspersed through these are large specimens of the European Larch Fir, its pale yellowish-green foliage showing up very conspicuously against the more sombre-like green of its near relative, the Norway Spruce. Here and there in openings between the spruce are to be seen some fine specimens of the Kilmarnock or Weeping Willow (Salix pendula). The long pendulous racèmes of its yellowish-green growth, often four or five feet in length, hanging quite perpendicular, present a very unique and pleasing relief to the dark green of the spruce.

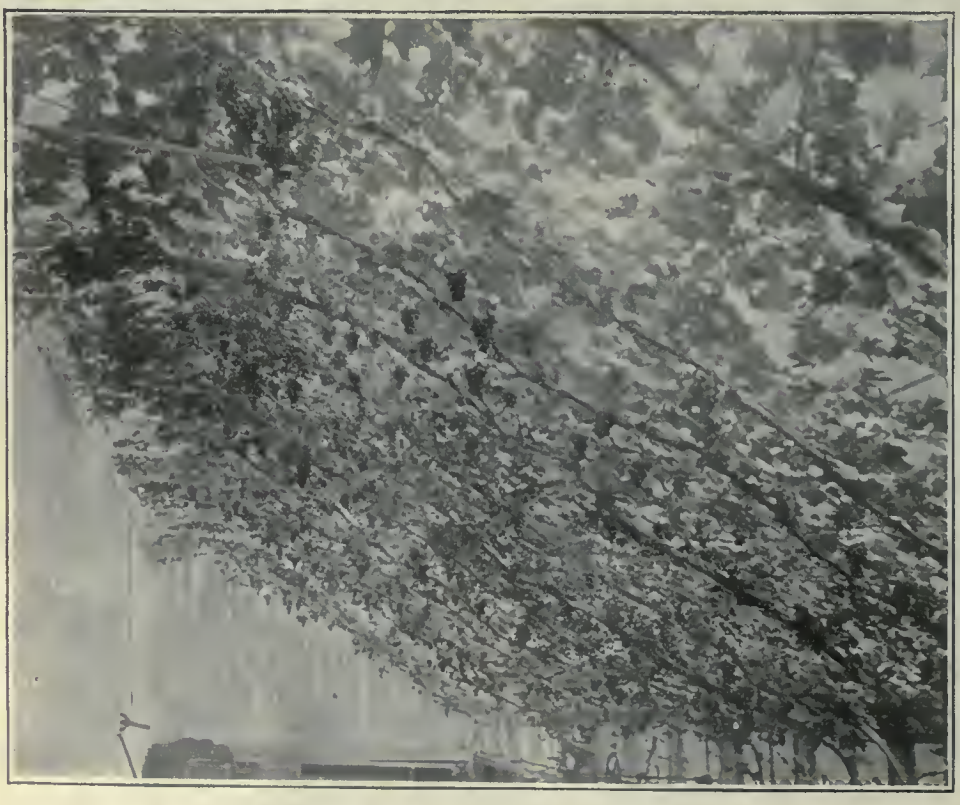
The foreground of this belt is made up of many varieties of trees that are quite rare. Numbers of the Cerasus or wild Cherry, including C. mahaleb, C. avinum, and others, many of which are seedling varieties of merit, some of which can be seen in the illustrations. These and many others, such as Locust, Weeping Birch, and Maple, help to relieve the sombre hue of the evergreens. In the immediate foreground are dotted groups of rare shrubs, such as Forsythia Fortuneii, Weigelas, English Hawthorn, Spireas, Deutzias, Halesia or Snowdrop Tree, and Altheas. The very rare European Laburnum alpinum, with its long drooping racemes of bright yellow flowers, can be found among the hundred or so varieties of flowering shrubs to be found scattered about on the extensive lawns. Two nice specimens of the Manitoba Maple are also to be seen. These trees were brought from Manitoba on the first through train over the Canadian Pacific Railway when the distinguished party of some of Canada's most noted statesmen went through to Vancouver for an inspection trip of this gigantic railway enterprise. These trees are now about twenty feet in height and are of more than passing interest for the reasons given.

One very pleasing feature of these lawns is the naturalization of the wild English Violet. Some years ago some seed of these was obtained from England by the writer and sown very early in the spring. The lawns are, at the time of writing (May 3rd), literally purple with these dainty little flowers, more especially on the partially shaded portions of the lawn. The perfume from them is very pleasing and noticeable some distance from the lawns. These violets are specially adapted for this work on partially shaded lawns.

Winding walks through the lawns lead down to extensive vegetable gardens and fruit orchards. Alongside of these paths are to be seen some fine pillar roses and flowering shrubs.

The vegetable gardens cover a space of about an acre in extent. The walks

(*Concluded on page* 159)



A Section of the East Vinery, "Inglewood".

The Perennial Border and its Best Flowers

F. E. Buck, B.S.A., Central Experimental Farm, Ottawa

If you make a perennial border, plant in it only the best flowers. Don't be satisfied with the inferior kinds which appeal to you personally.

It may be that you wish to specialize in native plants. That is a worthy ideal. Or you may prefer the old-fashioned flowers. Or, perhaps, to have a little of everything striking in order to get some color effect. Very good; suit and cultivate your own taste. Don't attempt to copy other people's borders too much. Remember, the flowers you plant are to be your friends, and, as was said before, choose those you like best. If you are furnishing a house you plan and consider the appropriateness of the furniture. Just so with a border. Remember also that the flowers are to stay where you put them for several years. Choose, therefore, the most suitable place in the garden for them. Some will want sun, some shade, others light, others shelter from wind. Some will require light soil, others heavy; all this you can arrange for them simply enough.

VARIETIES FOR ALL

You may be very ambitious and want flowers to admire in their places, or flowers to cut for the house, flowers for the buttonhole, flowers for the church jardiniere; flowers of all colors, flowers of all fragrances, and flowers of all sizes; all these you may have in a perennial border, because the flowers of a well-planned perennial border will last from the time when winter's snow gives place to the timid whiteness of the snowdrop until that time when the maple leaves glow in the evening of the year.

Besides the joy of tending and picking the flowers of this long season there is also the distinct pleasure of planting, replanting and re-arranging your plants both before and after their seasons of bloom. Bear in mind that intimate personal attention is the key to success with plants of any kind. There is no substitute for this.

The perennial border should add to the beauty and dignity of your home. It should be conspicuous, but not too prominent; dignified rather than gaudy. It should reign supreme wherever it is placed, but it must not look isolated. Do not hurry yourself in its making. It takes time to make a good border, and there is infinite pleasure in the making.

The arrangement of the plants in the border will depend upon the owner's taste, but with one exception the rule is to plant in the order of height, with the tall plants at the back. There is no rule for the distances apart at which the plants should be set, but don't overcrowd.

When first starting the border, plant without considering color effect. Work out your ideal in this and other ways gradually.

The Lily Pond in Mr. Armitage's Garden, Toronto

A Simple Aquatic Garden

J. McP. Ross, Toronto, Ont.

ANYONE who has even only a small piece of land may have an aquatic garden in it if they so desire, as its construction is simple and the expense light. The illustration on this page shows an aquatic garden created by Mr. and Mrs. Armitage, of Toronto, just west of Exhibition Park, and was pronounced by R. Cameron, superntendent of parks, to be the happiest effect he ever saw.

It is just a shallow basin dug out of the earth and similar in shape to a gigantic spoon. Over this was a coating of cement to the edge of the pond. The excavation was filled with water from a hose nearby, and in it, as may be seen in the illustration, were placed water lilies and other suitable flowers. A border of rough stones was placed around the edge of the basin to separate it from the flat lawn.

Around one end of the pond there were grouped a dozen or so Japanese Iris. These were placed in several groups so that one could see through them, and the surface of the little pool reflecting the blue or white of the sky above, while nestling on its placid surface were the nodding crowns of the lilies. The effect was simply sweet, and cost only a few hours' pleasant labour. It was generally surrounded with some birds bathing and drinking, and at all times, from spring till fall was a place of interest.

VARIETIES GROWN

The plants grown in the pond by Mr. Armitage were the Nymphaea Odorata Luciana (rosy pink flowers), interspersed with water hyacinths, water poppy (Limuocaris plumerii), the Common Arrowhead (Saggitarius). Amongst the tall plants were the Common Cattail Flag (Typhea Latifolia), Calla palustris, Eulalia Japonica, Eulalia Japonica variegata, and the Japanese Iris in several varieties. Bordering on the low edges were the swamp forget-me-not, Myosotis palustris. The soil was rich garden soil, mixed with rotted vegetable muck or peat from the marsh edge, and mixed with rotten cow manure.

The average depth of water in any lily pond should be two feet, though their cultivation is successful in shallower water. Of course, when shallow, the water must necessarily be warmer. Two feet allows one foot for soil and one foot for water.

For outdoor cultivation of tender kinds the roots may be planted in pails or boxes, and placed in the pond, and then towards winter the water is gradually drained off and the plants are carried into a frost-proof cellar till spring. It is not necessary to have any fountain or continuous flow of water, as the plants flourish better and bloom more freely in still warm water.

MAKING THE POND

When making a small pond, if the soil is too porous after the bottom is properly smoothed, pound it firmly, then put a layer of blue clay to a depth of six inches, and pound this firmly and smooth. If possible, put on a thin layer of concrete right up to the edge and over it. Finish up with a crown of small stones around the edge. This is not necessary, but it gives a nice effect.

Place here and there around the pond a clump of marsh plants with as natural an outline as possible. A hillock of rockwork on one side planted with rock plants, hardy grasses, and an occasional shrub or herbaceous plant, is very attractive. Leave spaces through which you can observe the water lilies and the water effect with its sky reflections. Seeds of water lilies enclosed in a ball of clay can be dropped in the pond at various distances. A few plants of the marsh marigold and other water-loving plants will do well, particularly any of the iris family.

Bulbs After Blooming

Rev. Jos. Fletcher, Whitby, Ont.

If you wish to use the same bulbs year after year, it is important that they should be properly cared for after blooming. If they have been planted deep enough, annuals or bedding plants may be grown between the rows or groups of bulbs, or even on top of them, without injury. The bulbs may remain in the same bed for about three years, after which they will need to be taken up and divided, or they will deteriorate through overcrowding.

If preferred the bulbs may be taken up as soon as blooming is over, care being taken not to break the foliage. Place them in a trench or box separating the varieties, and cover well with earth. Let them remain there until the foliage has withered away, and the bulbs are thoroughly ripened, after which they should be taken up, sorted and stored away until required again for planting in the fall. Those who would find the treatment here out-lined too much trouble to undertake, need not be discouraged, as they can obtain good results by planting in rich garden soil, if the culture is deep and drainage good.

A Good Support for perennials, or other plants needing stakes, can be made out of young cherry, elm, or other straight growing saplings. The twigs support the heavy heads of bloom, such as phlox, in a most natural manner, and if the bark shows it looks harmonious. Some double white petunias supported in this way last summer made a fine show. They were three feet high and nearly as broad. Every flower seemed to show. Little or no tying is necessary.—A.T., Queensboro, Ont.

It is a question whether petunias, annual phlox and verbenas ever do badly once they acquire a few leaves, and all three are very brilliant in the late summer and early fall.

Potato Growing in Ontario

C. A. Zavitz, Professor of Field Husbandry, Agricultural College, Guelph, Ont.

THERE are probably more people in Ontario growing potatoes than any other single crop. This is owing to the fact that potatoes may be grown extensively on the large farms for commercial purposes or they may be grown on farms and gardens of all sizes for home use.

According to the Census and Statistical Report of the Dominion of Canada, there were 152,887 acres of potatoes grown in Ontario in 1911. In that year, Ontario had fifteen thousand acres of potatoes more than the province of Quebec and about four times as great an area as that devoted to potatoes in any other province of the Dominion. Although about one-third of the potato land of the Dominion was located in Ontario in 1911, the supply of potatoes in this province has been insufficient to satisfy the home market. This, of course, is partly due to the fact that the yield of potatoes per acre in Ontario last year was less than that of any year since 1898.

Owing to the scarcity of potatoes, the price has become abnormally high. When prices are high there is usually a desire to considerably increase production. It is hardly probable, however, that there will be an over-production in the potato crop of the present year, as the scarcity and the high price of the seed will tend to restrict the amount planted.

While potatoes thrive on a great variety of soils, they grow particularly well on a rich sandy loam, which contains a considerable amount of vegetable matter. They generally do well on a thoroughly prepared clover sod. If it is desirable to use a commercial fertilizer to supplement the farmyard manure, we find, according to the results of the co-operative experiments throughout Ontario, that a complete fertilizer containing nitrogen, phosphoric acid, and potash, gives more economical results on the average soil than one containing a single element of fertility.

TOO MANY VARIETIES

There are altogether too many varieties of potatoes grown in Ontario. If only three or four of the most important varieties for general crop were used, larger yields of potatoes of better quality for home use and for the market would be obtained. The Empire State, the Rural New Yorker No. 2, and the Davies' Warrior have given excellent results for general use both in the experiments at Guelph and in the co-operative tests throughout Ontario. The Delaware and the Green Mountain, which apparently have given good results in New Brunswick, have been tested at Guelph for a number of years, and the results have been fairly satisfactory. Of the early varieties, the Extra Early Eureka and the Irish Cobbler have made fine records. In testing one hundred and ten varieties of potatoes for table quality in the spring of 1912 in which flavour, mealiness, and appearance were taken into consideration, the Empire State secured the highest score, which was closely followed by the Crown Jewel, the Westcott, and the Pearl of Savoy. The Deleware gave thirteen points lower than the Empire State in table quality.

A considerable proportion of the seed potatoes in Ontario appears to be more or less infested with the scab. It would be well to treat the whole potatoes before they are cut for planting. This can be readily done by immersing the potatoes for two hours in a solution made by mixing one pint of formalin with thirty gallons of water. After the potatoes have been treated, they can be dried and prepared for planting. The scab is produced by a fungus growth and cannot be reproduced except from living spores; hence the importance of treating infested seed before planting.

PREPARATIONS FOR PLANTING

A large number of experiments have been conducted at the Ontario Agricultural College in preparing seed potatoes for planting. It has been found that, on the average, potato sets taken from good sized potatoes will give a little larger yield per acre than potato sets of the same size taken from smaller potatoes. The size of the sets which are planted have a very marked influence on the yield of potatoes per acre. The number of eyes per set exerts a slight influence, but not nearly as much as does the size of the pieces.

Under average conditions it is wise to cut good sized, smooth potatoes into pieces which will weigh from one to two ounces each, and which will have two, three, or four eyes in each set. If there is only one eye in a set the yield is lighter and if there are five eyes in each set there are too many small potatoes. In some sections large seed potatoes will likely be very scarce and very expensive this spring. A potato set one ounce in weight, cut from a two ounce potato, will likely give a greater yield than a half ounce set taken from an eight ounce potato.

I would suggest that where potatoes are very scarce a comparatively small quantity of good sized potatoes be cut into sets and used for seed for the production of potatoes to be used for planting in the following year. For the main crop for table use, however, potatoes weighing two or three ounces each might be cut into ounce pieces and used for planting to good advantage.

A marked advantage is usually found from cutting potatoes and throwing the freshly cut pieces into land plaster or gypsum allowing as much as possible of the plaster to adhere to the freshly cut pieces. This treatment usually increases the yield of potatoes per acre from sixteen to eighteen bushels.

PLANT PROMPTLY

Potatoes should always be planted immediately after being cut. In some sections of Ontario it has apparently become the custom to leave the potatoes a few days before planting, believing that an advantage is obtained thereby. This practice was probably originated by cutting the potatoes on a rainy day or on a Saturday when the children were home from school and the sets were kept a few days before planting, and the results have apparently been good. As the result of some ten years' experiments at the College and five years' co-operative experiments throughout Ontario it was found that potatoes which were cut and planted immediately gave an average of about fifteen bushels per acre more than those which were cut four, five, or six days before they were planted.

If the land is a sandy loam the potatoes can be planted to a depth of four or five inches and the land cultivated on the level. If the soil is a heavy clay, however, it is probably better to plant to a depth of only about three inches and to slightly ridge or hill the land at the proper stages in the growth of the potatoes. In experiments conducted for ten years on an average clay loam, the yield was practically the same from level and from ridged cultivation.

Experiments have been conducted carefully by planting potato sets in drills about twenty-eight inches apart with the sets a foot apart in the rows in comparison with the planting of the same amount of seed in rows thirty-three inches apart both ways. Considerably larger yields were obtained from the closer planting.

It is found to be a detriment to use more than one set in each place, as for instance, one potato set two ounces in weight is likely to give a larger yield of potatoes than two sets of one ounce each which are planted close together.

Some people are very particular in planting cut potatoes to so place the potato sets in the land that the eyes will be turned upwards. The results of experiments, however, show that it does not matter whether the eyes or the sur-

A Productive Vegetable and Fruit Garden in Norfolk County, Ont., That of John Trinder, of Port Dover

This garden comprises about three acres. Mr. Trinder finds onions and celery his most profitable crops, but grows, also, cabbage, cauliflower, tomatoes, parsnips, melons, strawberries and other varieties of produce. He sells most of his products to farmers living to the east of him on land not suitable for the production of these crops. The balance is sold in Port Dover.

face of the cut potatoes be turned towards the surface of the soil.

It is usually wise to harrow the potato land after the potatoes are planted and before the growth appears. This tends to break the crust of the soil and to check the growth of weeds. On many soils the harrow can frequently be used after the potato tops have made a growth above the ground. The first cultivations between the rows can be fairly deep, but when the fibrous roots penetrate the ground it is wise to cultivate more shallow. Shallow cultivation after the potatoes get a good start keeps down the weeds and forms a mulch which has a marked influence in retaining the moisture.

Garden Vegetables for the West

Angus Mackay, Superintendent Experimental Farm for Saskatchewan

AT the beginning of the vegetable alphabet is found asparagus. It should be found also in every garden in the west, as it is one of the easiest to grow, and never fails. While some advocate trenching and heavy manuring before planting, it is sufficient if our soil is plowed or dug twelve inches deep, the roots planted in rows thirty inches apart and two feet apart in the rows, each fall after frost sets in a heavy coating of well rotted manure applied, and in the spring dug in about the roots. For asparagus, a bed should be set apart by itself, as the one set of roots will continue for years to produce abundantly. Conover's Colossal and Barr's Mammoth are good sorts.

Beans are not a sure crop. They are easily injured or killed at any stage of their growth, and should never be sown too early, and only the earliest varieties grown. They are never out of danger if the plants are above ground before June 1st. Dwarf Extra Early, Early Six Weeks, and Dwarf Kidney are among the best varieties.

In connection with the growing of cabbage, cauliflower, and other plants, cut worms are very destructive. Poisoned bran—one part of Paris green to one hundred parts of poisoned bran, not too wet—scattered on the soil about the plants, and repeated occasionally, is a reliable remedy.

Cauliflower can be grown in much the same way as cabbage. Only a few of the early cauliflower should be planted at one time, as the heads soon spoil. Planting at intervals of two weeks will prolong the season.

Early Snowball, Early Dwarf, and Early Paris are good and sure varieties. Late varieties, such as Autumn Giant and Le Normand, seldom mature, but can be pulled before severe frost, placed upright on two inches of earth in a cellar or other frost-proof place, and the roots covered two inches and kept moist, but not wet. The heads will mature and produce as good cauliflower, through November and December, as in the open.

BEETS

This vegetable can be sown as early in the spring as the soil permits. The seed is slow to germinate, and will stand a heavy frost. In heavy soil, the turnip variety is best, as it grows chiefly on the surface. For light soil, the long varieties are better suited, and are rather better keepers than the round sort, though both kinds can be kept during the winter and spring by packing in a box or barrel, mixing in dry earth, and covering with three or four inches of earth.

Early Eclipse, Early Blood Red are good round varieties, and Long Blood Red and Covent Garden half-long are good sorts for lighter soil. Sow seed rather thick and two inches deep. Thin out the plants four to six inches apart in the rows.

CELERY

Celery is rather difficult to grow successfully, especially when water is not available. The trench system has been found the best, although it entails a little more labor than planting on the level or in frames. The advantage of the trench is that the roots do not dry out as fast as either of the other two ways. Less water is required and bleaching can be better done.

CUCURBITS

Citron, cucumber, squash, pumpkin, and so on, can be started in a box or hot-bed April 20th to 25th, and planted in the garden June 1st, or sown direct in garden June 1st to 10th. Protection at night requires to be given plants when set out, for two or three weeks. Satisfactory varieties are: Citron, Preserving; Cucumber, Short Green, White Spine, Giant Peru and Chicago Pickling; Squash, Crookneck.

The Canadian Horticulturist

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H. BRONSON COWAN, Managing Director

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CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
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November, 1911	9,988
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May, 1912 11,788

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EDITORIAL

COUNTY EXHIBITS

For several years a number of the leading fruit growing counties of Ontario, by means of small grants given by their county councils, have made exhibits of apples each fall at the Ontario Horticultural Exhibition. Several of these counties, particularly Norfolk, Ontario, Durham and Northumberland, are now reaping the benefits of their enterprise. During the past couple of years a considerable number of people from abroad have commenced to purchase blocks of land in these counties for fruit growing purposes. Scores of thousands of dollars are being invested by outside capitalists in this way in some of these counties, and the sections affected are reaping the benefit.

At first it was difficult to convince hard-headed county councillors that their counties would derive benefit from any money they might expend to enable exhibits of apples being made by their counties at the Horticultural Exhibition. Even yet there are some county councils that need education on this point. Their doubts are soon likely to vanish, as the results obtained are now so apparent even the most obtuse may see.

It is not so much the number of people who attend the Horticultural Exhibition and examine the exhibits that counts as it is the character of the people who do so. These include not only leading fruit growers but representatives of the agricultural and daily press, government officials and other people occupying positions which enable them to mould public opinion. These people, seeing certain counties well represented by fruit exhibits, become impressed with the fruit possibilities of these districts and henceforth advertise them directly and indirectly in many valuable ways. Those counties which neglect to mould public opinion in this way miss great opportunities for their own development.

PARCELS POST

The interests of the fruit and vegetable growers of Canada are more directly concerned with the agitation that has now reached considerable proportions in the Dominion House of Commons for the establishment of a parcels post system in Canada than their apathy regarding this proposal would seem to indicate. Two members of the House, W. F. Maclean, M.P., of York County, and J. E. Armstrong, M.P., of Lambton County, are both urging the introduction of this system. Mr. Maclean advocates an unrestricted service, while Mr. Armstrong is contending for a service that will be limited to rural mail routes and the towns and cities with which they connect. For the average fruit or vegetable grower this latter system would be of comparatively little value.

The postal regulations in Canada regarding parcels are apparently designed to prevent their carriage by post. The charge is sixteen cents a pound, and the limit of weight is five pounds. A five-pound package thus costs eighty cents. This charge is so excessive as to be practically prohibitive. In England a similar package can be carried for twelve cents. The contrast in cost tells its own story.

Practically all European countries have made a success of the parcels post system. The limit of weight in Belgium is one hundred and thirty-two pounds, in Austria, Germany and Switzerland, one hundred and ten pounds, France twenty-two ponnds and Australia, Cuba, Great Britain and Italy eleven pounds. The charge for an eleven-pound parcel, which at our rate in Canada would be one dollar seventy-six cents, is in Austria twelve cents, Belgium sixteen cents, Germany thirteen cents, Great Britain twenty-two cents, Italy twenty cents and Switzerland eight cents. In each of these countries a considerable trade has been built up in the shipping of fruit and vegetables, done up in small packages, to customers in the towns and cities. The introduction of a reasonable parcels post system in Canada would make possible the development of a similar trade, and help to do away with the middlemen. Our Fruit-Growers' Associations should give more attention to this matter than they have.

NURSERY REGULATIONS

In an interview with Mr. Thomas Cunningham, Provincial Inspector of Fruit Pests for British Columbia, published recently in a Vancouver paper, Mr. Cunningham is credited with the statement that although importations of nursery stock into British Columbia this year have been greater than ever before, none have been received from Ontario, the stock having all come in from the western states. Mr. Cunningham further stated that British Columbia should grow all its own nursery stock.

Had the fumigation regulations been designed especially to keep out Ontario stock, they could hardly be more effective than they are. The fumigation station is located in Vancouver. Ontario nursery stock intended for western points in British Columbia has to be shipped some hundreds of miles across the province to Vancouver, where it is fumigated and then be reshipped to the western portion of the province. Delays frequently occur at the fumigation station which, with the extra shipping, have proved so disastrous, on many occasions, to the stock, Ontario nursery men have practically been driven out of that province. The greatest loss is to the British Columbia fruit growers, as much of the stock grown in Ontario is better suited to certain districts in British Columbia than is stock from the Pacific States.

What is needed is that a fumigation station should be established on the western border of British Columbia. The establishment of such a station has frequently been urged in British Columbia by responsible parties, but as yet no action has been taken. It has seemed at times as if an effort was being made by a few interested parties to keep out the eastern stock, in spite of the requirements of the local fruit growers, in order that the establishment of nurseries might be encouraged in the province as well as to assist those now in business there.

BOOKS ON HORTICULTURE

In almost every city, town and village in Ontario in which there is a horticultural society there is also a public library. The same condition exists to a considerable extent in most of the other provinces as well. Very few of these public libraries contain books relating to horticulture. Here is a chance for our horticultural societies to do some good work. Were they to appoint a committee to wait on their library boards and submit lists of horticultural books that should be kept in the library for reference

purposes, many of these boards would be glad to comply with their request.

Among the books that library boards should see are kept on file are, Bailey's 'Cyclopedia of American Horticulture," Henderson's "Book of Plants and General Horticulture," and other similar standard works, most of which are too expensive for the average person to purchase for private use. Whenever library boards procure such volumes the fact should be announced through the public press so that lovers of horticulture may know that these books are available for reference.

The officers of the Toronto Branch of the Ontario Vegetable Growers' Association have been doing splendid work by arranging for regular meetings of the members of their branch at the greenhouses of different members. The rivalry, not to say jealousy and suspicion, between the vegetable growers in some centres is so pronounced it would be found difficult to arrange for such a series of meetings. The fact that the members of the Toronto branch of the association are proving themselves to be above such things is a pleasing indication that growers are at last beginning to see that they can advance their interests best by co-operating with others engaged in the same occupation, and not by hugging their little secrets to themselves for fear someone else may discover them.

The schools division of the Ontario Experimental Union, in cooperation with the Department of Education and the Ontario Agricultural College, at Guelph, is conducting some valuable educational work among the schools in the rural districts in the growing of vegetables. Circulars are distributed to the schools suggesting simple experiments and giving full directions concerning their conduct. The experiments relate to lettuce, onions and other similar crops. The work is under the direction of Mr. S. B. McCready, and is being attended with excellent results.

What the Big Ones Think

The Association of National Advertising Managers, is an organization of 161 of the leading, brainiest and most influential men in the advertising world of the United States.

The members of this Association represent concerns which have become well known through their extensive advertising, to almost every reader of magazines and newspapers in America. Each member spends on an average $166,000 per year for advertising, making a total for the whole Association of $25,000,000. No one can be a member who spends less than $50,000 per year for advertising purposes.

The stand these men take in regard to improper advertising is well set forth in a platform adopted February 16, 1912, part of which reads as follows:

"In the opinion of this Association, publications should not accept advertising that is calculated to injure any of their readers in morals, health or pocketbook, or that contains unwarranted or extravagant statements."

The reason for the stand taken by these experienced advertising men is not far to seek. They realize that the less dishonest advertising there is published, the more effective will honest advertising become. Space in the publications they use, becomes accordingly of greater value to them, as the objectionable advertising is eliminated.

The Canadian Horticulturist for eight years has refused to print any advertising of an objectionable nature. It has thus contributed its share towards placing advertising on the higher plane, generally, it occupies to-day. But more than that, it has won the confidence of those who read The Canadian Horticulturist, as they realize they will get a square deal from the advertisers who use space in these columns.

The better class of advertisers are realizing more than ever before, the increased value to them of space in publications which will print only good, clean, reliable advertisements. This is one of the big reasons why the volume of advertising of this class in The Canadian Horticulturist continues to increase, and why many of the best Canadian firms, in their lines, are using The Canadian Horticulturist to tell its readers about their goods

We do not admit advertisers to our columns except such as we believe are thoroughly reliable.

PUBLISHER'S DESK

The special front cover design on the April issue of THE CANADIAN HORTICULTURIST was evidently much appreciated, if we are to judge from the words of approval we have heard from our readers. Officers of horticultural societies and others have gone out of their way to let us know how well they liked the design. We are now planning to publish a similar design on the front cover of our Special Packing and Exhibition Number which will be published on the first of next September. For this number we would like the illustration to show a packing scene in some modern Canadian orchard, the trees of which should be loaded with fruit. Here is an opportunity for some of the leading fruit-growing districts of Canada to advertise their possibilities. What enterprising grower or growers in some of the leading districts of British Columbia, Ontario and Quebec, or the Maritime Provinces, will supply us with the best photograph for use on the front cover of that issue? Any readers of THE CANADIAN HORTICULTURIST who have an illustration which they think will be suitable are invited to send it.

"Why do you publish so few articles relating to fruit in the front part of the paper?" we are sometimes asked by fruit growers, and again the question is, "Why do you publish so few articles relating to amateur flower growing?" The fruit growers would like to see all the front part of The Canadian Horticulturist devoted to fruit growing, while the flower growers would like to see it filled with articles that would be of special interest to them. The answer to both is simple. The cost of publication prevents. As yet the field in Canada is not large enough to support a paper devoted wholly to fruit growing, nor is it large enough to sustain one pertaining only to amateur flower growing. Neither enough subscriptions nor enough advertisements could be secured to make such papers a financial success. The result is we find it necessary to draw support from both fields and, therefore, have to divide our space so that we can furnish information that will be of interest to both classes of readers. On the whole, however, we hear very little complaint. Everything considered, we feel free to state that there is not another horticultural publication in the world that gives as much information at as low a subscription price as The Canadian Horticulturist and which is as profusely illustrated and published on paper of equal grade.

Among the articles we anticipate featuring in the July issue of THE CANADIAN HORTICULTURIST will be one entitled "What Cover Crops Shall I Grow?" by Prof. C. A. Zavitz, of the Guelph Agricultural College. There will also be an article of unusual interest to the Niagara District dealing with the possibilities of irrigation for that district. This article will be by Mr. T. G. Bunting, of the Central Experiment Farm, Ottawa, who has given this subject considerable attention The picking and selling of the berry crop will be the subject of a timely article contributed by Grant S. Peart, of Burlington. "The Celery Blights" will be discussed in a profusely illustrated article by Prof. E. M. Straight, of Macdonald College. A number of interesting features are being planned for the garden section, also including the description of another Canadian garden and some timely garden notes by one of our best known authorities. As usual, the issue will be replete with timely, interesting, helpful information.

Liverpool Apple Market

There was an increase of about 160,000 barrels in the quantity of apples arriving from the United States and Canada last year at Liverpool compared with the previous year, but a decrease of about 120.000 in the number of boxes arriving. The increase in barrelled apples was due to the larger crop in the Hudson river and Nova Scotia districts, and the smaller receipts of boxed apples to the smaller crop in what is known as the box-growing district, west of the Rocky Mountains, and because supplies had been held back in anticipation of higher prices later in the season.

The total apple imports into Liverpool during the season 1910-11 were 649,055 barrels (which included 361,268 boxes, calculated at three boxes to the barrel). The prices for barrelled apples were considerably lower at the beginning of the present year than for the same time last year on account of the larger supplies, due somewhat to a larger crop than usual in Great Britain, but the boxed apples averaged about thirty-six cents a box higher.

Nova Scotia

Final proof that the great apple crop of Nova Scotia last year almost reached the two million barrel mark is furnished by a statement issued by Dominion Fruit Inspector G. H. Vroom. It shows that the total number of barrels shipped to all markets, including those in Great Britain, South Africa, Germany and the West, amounted to 1,730,496 barrels. There were shipped also 2,086 half barrels and 10,011 boxes.

London received 783,115 barrels, Liverpool 211,080, Glasgow 163,317, Germany 117,933, South Africa 3,570, the West Indies 3,831, the West 176,150 and the local markets 150,000. Prospects point to a good crop for 1912.

The Standardizing of Apple Barrels

At the recent Dominion Fruit Conference in Ottawa a prolonged discussion was held over a proposal to adopt a standard apple barrel. The discussion resulted in a resolution being passed urging the government to provide two standards for apple barrels, one the 96-quart barrel, commonly used in Nova Scotia, and the other the 112-quart barrel, commonly used in Ontario. The Department of Agriculture was requested to provide for the enforcement of the use by all growers of one or the other of these standards, and that the manufacturers should be made responsible for their size.

Talking privately with the delegates after the discussion, there seemed to be a general opinion that ultimately only one standard will be recognized and that it will be the larger barrel as used in Ontario. While the Nova Scotia delegates fought hard for the smaller barrel, it was said that a number of them personally were favorable to the larger barrel, but that they had been instructed by their association to work for the smaller barrel. Many of the larger growers of Nova Scotia are said to favor the large barrel, and to hold the view that within a few years the majority of growers will do the same.

THE DISCUSSION.

The discussion was opened by Mr. E. A. Dewar, of Charlottetown, P.E.I.: "In Prince Edward Island," said Mr Dewar, "we get our stock from New Brunswick or Nova Scotia. We ship to Great Britain, where our barrels compete with the Ontario and United States barrels, which are larger. This makes it harder for us to introduce our barrels. It costs no more to head or to ship the larger barrel, and time is saved in packing them. The British buyers pay more for the larger barrel, as many of them resell from it by weight. The flat hooped barrel looks and sells better than the round hooped barrel, although the latter has strength in its favor. Nova Scotia stock, I find, is not properly matured, and shrinks considerably. The Ontario barrels are better dried, and stand shipping better than the Nova Scotia barrel."

Dairy Commissioner J. A. Ruddick read the specifications for the legal barrel, which stated that it must not contain less than 96 quarts.

Captain C. O. Allen, Kentville, N.S.: "Our Nova Scotia barrel complies with all the legal requirements. We are now accustomed to it, and do not want to be forced to change it. While there is no extra charge for shipping the large barrel at present, it is not likely that this condition will continue, as the steamship companies are not going to continue long to carry twenty pounds a barrel free. Had we used the larger barrel last year we would have shipped 65,000 less barrels than we did. Were we to change to the large barrel the steamship companies would soon notice the change and alter their charges accordingly. I admit, however, that the Ontario and Quebec barrels are going forward at a lower rate proportionately than ours. The appearance of the barrels has little effect on the sale of the apples, as after the apples reach the Old Country the barrels are opened and the apples are resold in small quantities by weight and not in bulk."

P. W. Hodgetts, Toronto: "Ontario fruit growers do not want to change the barrel they are using, as we believe that we are getting the best of the deal. The British buyers pay us well for the extra weight we give them, and we have a considerable saving in shipping charges."

Capt. Allen: "We are testing the Ontario barrels on a comprehensive scale, and are open to conviction in regard to its merits, but for the present would like to see this matter left in abeyance."

Prof. W. S. Blair, Macdonald College, Quebec: "It is most important that we should have a recognized standard through all of Canada, as the different sizes now used result in injustice in some cases."

R. J. Graham, Belleville, Ontario: "There is a considerable difference in the size of Nova Scotia barrels. The staves vary in length. The onus for the size of the barrel should be placed on the cooperage firms. If Nova Scotia and Ontario are to continue to use different sized barrels I am satisfied, but the barrels used in each province should be uniform in size. Quite a lot of the Nova Scotia barrels are smaller than the legal size. A few people in Ontario are still using the stingy barrel, but ninety-five per cent. are using the large size. In Nova Scotia the great majority use the stingy size."

Capt. Allen: "This stingy sized barrel has appeared during only the last two years. In Ontario the barrels are used for flour and apples, and in Nova Scotia they are used for potatoes and apples. It would be a great hardship if we had to use the large barrel for potatoes."

R. J. Messenger, Bridgetown: "We should be striving for a national standard for Canada. The Nova Scotia barrel is

THE
Canadian Nursery Co.
LIMITED
10 Phillips Place
MONTREAL

Have still a good stock of hardy, Northern grown

Apple Trees,
Currants,
Gooseberries,
Raspberries, etc.

and an immense stock of Specimen Shrubs, Ornamental Trees, Roses, etc.

The collection of Perennial Plants and Peonies on their nurseries at Pointe Claire is probable the most complete in Canada.

LISTS AND INFORMATION FURNISHED FREE OF CHARGE

Apple Boxes

WE make a good box at the right price. It is especially suited for the apple grower and shipper.

One of our large customers last year used thousands of our boxes for the export trade. Such trade demands a strong, durable box. Our boxes gave every satisfaction.

Our Boxes are Right.
The Price is Right.
Let Us Quote You.

Barchard & Company
135-151 Duke St. TORONTO

more easily handled than the larger barrel, and it holds three bushels or standard boxes of apples, or as near as a barrel can."

Eben. James, Toronto: "Most sections in Ontario use the thirty-inch stave, but in the Niagara district and in portions of Quebec the growers use the twenty-eight and a half inch stave. I am an advocate of the large barrel. If Nova Scotia's apple trade grows as rapidly as the growers seem to expect they will soon have to ship apples to other markets and when they do they will be compelled to use a larger barrel."

Mr. Dewar: "We might as well permit the sizes as now used, as conditions will soon right themselves. The Nova Scotia growers will soon find that the loss they sustain through shipping apples in the small barrels is so great they will be forced to use the large barrel."

Robt. Thompson, St. Catharines: "When enacting legislation relating to the apple barrel the government should specify the dimensions of the barrel."

Mr Onslow, of Niagara-on-the-Lake, did not think that it would be possible for the government to recognize two standards.

Mr Thompson pointed out that there were different standard baskets.

Mr. M. C. Smith, of Burlington, offered to wager that not a barrel had been made in Nova Scotia that measured ninety-six imperial quarts and not one that contained three bushels. A Nova Scotia delegate said that much of the trouble over the size of the barrels was caused by the fact that the coopers do not turn out barrels that are uniform in size. The discussion ended by the carrying by a large majority of the following resolution: "Whereas there are two sizes of apple barrels in general use in Canada, and whereas it would appear that uniformity would be more nearly obtained by the adoption of the specified standard sizes for use in Canada, be it resolved that the conference recommend the government to provide two standards, one the 96-quart barrel commonly used in Nova Scotia, and the other the 112-quart barrel commonly used in Ontario, and that the Department provide for the enforcement of the use by all growers and dealers, of one or the other of these standards, and that the manufacturers be held responsible."

The National Fruit Growers Association

As previously announced in THE CANADIAN HORTICULTURIST, a national fruit-growers' association was formed by the delegates who attended the recent Dominion Fruit Conference in Ottawa. The following draft constitution was adopted:

1. This association shall be called the Canadian National Fruit-Growers' Association.

OBJECTS

2. The objects of the association shall be:

(a) To encourage improvements in fruit growing.

(b) To develop markets for fruit abroad.

(c) To initiate and influence legislation affecting Canadian fruit interests and generally to take such action as the

Douglas Gardens

Oakville, Ontario

China Asters

100 for 75 cts.; 25 of one variety at the 100 rate.

Vars.—Queen of the Market, White and Pink, Lavender Gem, Royal Purple, Branching Whites and Crego, Pink. Plants once transplanted.

Antirrhinum (Snapdragon), each 10 cts.; 10 for 60 cts.

Salvia, Var. Bonfire, fine plants, each 10 cts.; 10, 60 cts.

Scabiosa, long season of bloom, each 10 cts.; 10, 60 cts.

Stocks, Cut and Comb Again, each 5 cts.; 10, 25 cts.

Stocks, Large Flowering, 10 week, each 5 cts.; 10, 25 cts.

These plants are now in good form for shipping and setting out.

Gladiolus

Light colored section, unnamed, 25 for 75 cts.

Red and Scarlet section, unnamed, 25 for 60 cts.

Mixed Colors, 25 for 55 cts.

Supply of named varieties is exhausted.

Above prices include carriage prepaid.

JOHN CAVERS

Fruit Trees and Flowers

We still have a nice stock of most lines of trees and are in a position to ship the day orders are received. Wire us rush orders at our expense.

Owing to the prospect of a rather light crop of Peaches in our locality, we are planning to grow quite a quantity of CUT FLOWERS, especially

China Asters

We bought the finest strains of Asters obtainable, paying a long price for the seed. It is saved by the best grower of Asters on the continent. Our plants will have three transplantings and every care. We expect to have a quantity to dispose of as we have planted more seed than we need. The early plants will be ready about May 20th and the late ones June 15th. We offer the Asters at

20 cents per dozen or
$1.00 per 100, postpaid

AUBURN NURSERIES
QUEENSTON, ONT.

For the Land's Sake

Use the best Manure and get

Good Crops

For Nurseries, Fruit Growers and Gardeners.

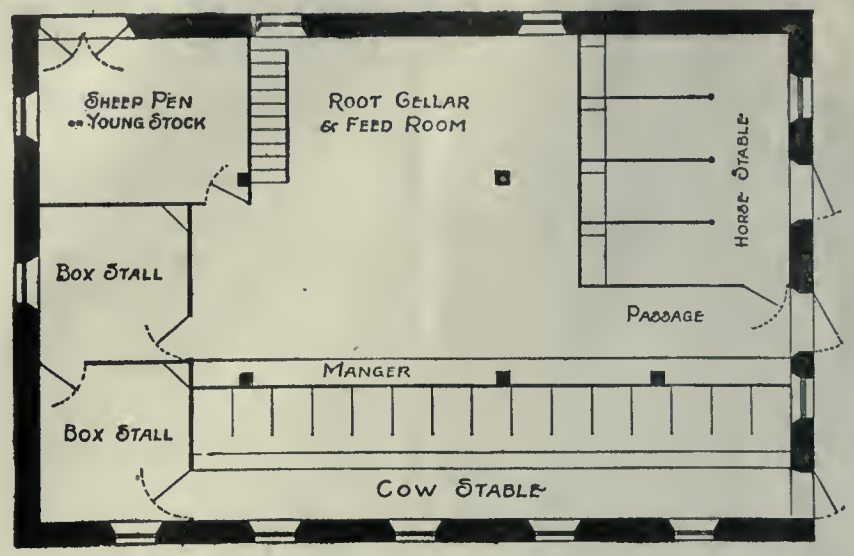
Sure Growth Compost

Makes poor land fertile and keeps fertile land most productive.

Supplied by

S. W. Marchment
133 Victoria St. TORONTO
Telephones: Main 2841; Residence, Park 951

Say you saw the ad. in The Canadian Horticulturist



One of the modern barn plans prepared by our Builders' Service Dept.

Above is shown one of the modern barn plans prepared by our "Builders' Service Dept." Others are shown in a portfolio that will be mailed to you on receipt of the coupon attached to this ad, properly filled out.

If you will tell us the size of the barn you expect to build, and the number of cattle you want to house, our Board of Advisers, consisting of ten of the best barn builders and contractors in the Dominion, will co-operate with you to plan a building exactly suited to your own particular requirements.

This service is offered to you FREE of charge. It's our way of showing our appreciation of the generous and hearty support the farmers and builders of Canada have given our products, particularly Preston Safe-Lock Shingles.

Preston Safe-Lock Shingles merit the tremendous demand they enjoy to-day, for they afford *guaranteed protection* against lightning. They keep out the rain, snow, moisture, wind and fire, too. They cost nothing for up-keep, as they never need painting or repairs.

Our latest edition of "Truth About Roofing" booklet tells all about them. We'll send a copy along with the Portfolio of Barn Plans. You want the Portfolio, that's certain, if you intend to build. So send the coupon by first mail. Address it to

E. Dolph Manager

Metal Shingle & Siding Co., Limited

Branch Office and Factory, Montreal, Que. **Preston, Ont.**

Please send me portfolio of Barn Plans showing framework construction and plans of interior. I intend building a barn.....ft. by.....ft. Do you intend re-roofing or re-siding any building this year? (Yes or No.)

Name

P. O. Address

County

Province

CANADIAN HORTICULTURIST Paper

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best interests of the industry may from time to time demand.

MEMBERSHIP

3. The membership of the association shall be composed of the following representatives:

(a) The president, vice-president and secretary of every provincial fruit-growers' association.

(b) The chief officer of the fruit branch or such other officer in each province who may have charge of the fruit interests.

(c) The commissioner of the Dominion Department of Agriculture in charge of the fruit interests.

(d) The minister and deputy minister of agriculture for the Dominion of Canada shall be ex-officio members of this association.

(e) Such other persons as may hereafter be named by the association on the recommendation of the executive.

DIRECTORS

4. The board of directors of this association shall consist of:

(a) The executive committee.

(b) One representative appointed by each provincial association.

5. The executive committee shall consist of the president, vice-president, secretary-treasurer and three members to be elected by the association.

6. At each general meeting of the association, a president, vice-president, secretary-treasurer and three members of the executive committee and an auditor shall be elected who shall hold office until their successors are appointed.

7. The directors shall have power to appoint committees from among their members or otherwise. At the first meeting of each committee a chairman shall be elected.

8. The executive committee shall carry into effect the work decided upon by the director.

9. In case a vacancy occurs in the executive or directorate the executive committee shall fill the vacancy forthwith and the appointee shall remain in office until his successor is elected.

10. General meetings of the association shall be called at such intervals as may be determined upon by the directors.

11. Notice of each meeting of the association shall be mailed at least twenty days prior to date of meeting to each member whose address is known to the secretary.

12. Directors' and executive meetings shall be called by mailing notice at least fourteen days before the date of the meeting to each director or member of the executive committee. Directors residing west of Ontario or east of Quebec shall also be notified by telegram at time of mailing said notices.

(a) Directors' and executive meetings may be held on shorter notice than above, providing a majority consent thereto.

13. Twelve members shall be a quorum of any meeting of the association, six shall be a quorum of a meeting of the directors and three of the executive committee.

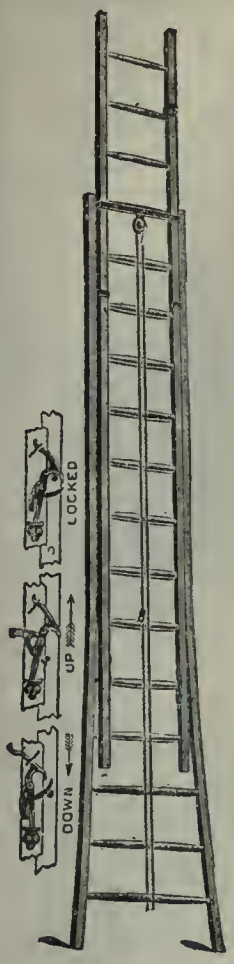
14. Only the expenses of officers or directors may be paid by this association.

BY-LAWS

15. The association shall at its first meeting adopt such by-laws and regulations as may be expedient and not inconsistent with the constitution.

ADDITIONS AND AMENDMENTS

16. Any member desiring to introduce any addition or amendment to the constitution shall notify the secretary in writing, enclosing therewith a draft thereof at least. Sixty



Buy Your Ladders Now

You will want them badly when the rush starts

We Put the Very Best Material and Workmanship into Every Ladder We Make

WE GUARANTEE Our Ladders for One Year Against Breakages Due to Defects in Material or Workmanship

2811 Pounds carried with ease on one of our HERCULES Step Ladders

Almost before you realize it, the busy fruit picking season will be here. Have you got the new ladders you will need? Now is a good time to get them, before the rush starts.

We make ladders of all sizes and for all purposes. **Fruit Picking Ladders** a specialty.

Co-operative Associations! We especially invite correspondence from secretaries of Co-operative Fruit Associations and similar organizations. We are prepared to quote attractive prices on large orders.

Our Full Line of Ladders described in Catalogue F.
Send a Postcard for a copy.

The Stratford Mfg. Co., Limited

Makers of Ladders for Every Conceivable Purpose

STRATFORD, ONT.

Big Ben

Don't set your mind—set Big Ben

Don't bother *your* head about getting up. Leave it to Big Ben.

You ought to go to sleep at night with a *clear brain*—untroubled and free from getting up worries. You men, if you are up to date farmers, work with your brains as well as with your hands. Such a little thing as "deciding to get up at a certain time in the morning" and *keeping* it on *your mind* often spoils a needed night's rest and makes a bad "next day." Try Big Ben on your dresser for one week. He makes getting up so *easy* that the whole day is better.

Big Ben is not the usual alarm. He's a timekeeper; a good, all-purpose clock for *every day* and *all day* use and for years of service.

He stands seven inches tall. He wears a coat of triple-nickel plated steel. He rings with one long loud ring for 5 minutes *straight*, or for 10 minutes at *intervals* of 20 seconds unless you shut him off.

His big, bold figures and hands are *easy to read* in the dim morning light, his large strong keys are *easy to wind*. His price, $3.00, is *easy to pay* because his advantages are so *easy to see*. See them at your dealer.

5,000 Canadian dealers have already adopted him. If you cannot find him at your dealer's, a money order sent to *Westclox, La Salle, Illinois*, will bring him to you duty charges prepaid.

$3.00

At Canadian Dealers.

Imperial Bank

Established OF CANADA 1875

HEAD OFFICE TORONTO

Capital Paid-up.	6,000,000.00
Reserve Fund	6,000,000.00
Total Assets	72,000,000.00

D. R. WILKIE, President and General Manager
HON. R. JAFFRAY, Vice-President

Branches and Agencies throughout the Dominion of Canada

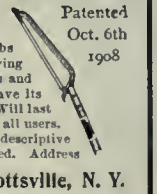
Letters of Credit, Drafts and Money Orders Issued available in all parts of the world

Special attention given to collections

Savings Department at all Branches
Interest allowed on deposits at best current rates

PRUNING SAW

Patented Oct. 6th 1908



Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address

FRUITGROWERS' SAW CO., Scottsville, N. Y.

Representative for Ontario, Jas. E. Johnson, Simcoe, Ont.

Aphine

The Insecticide that kills plant Lice of every species

$2.50 per Gallon; $1.00 per Quart.

Dupuy & Ferguson, Montreal, Can.

days prior to the date of any meeting of the association a copy of the proposed addition or amendment shall be sent by the secretary to each known member of the association.

17. Any addition or amendment shall require a two-third's vote of the members present at the meeting to pass.

Note—It is expected that the Dominion Government will make an annual grant to the association sufficient to meet its expenses.—Editor.

OntarioHorticultural Exhibition

The directors of the Ontario Horticultural Exhibition have decided to hold the next exhibition in the new arena on Mutual Street, Toronto, November 12th and 16th. The Ontario Department of Agriculture will be asked for an increased grant as there has been no change in the amount of the grant for a number of years, although the exhibition has now reached a point where it is believed to be entitled to more assistance. The money given to the stock shows at Ottawa and Guelph for maintenance alone is several times greater in each case than it is for the horticultural exhibition. in addition to which both shows have buildings of their own, while it is necessary for the directors of the horticultural exhibition to rent a building.

The honey committee has secured from the directors the amount of money formerly awarded in prizes. It will be used for the putting up of a big display. It is expected that all of the local bee-keepers' associations throughout the province will contribute, and that the exhibit of honey will be away ahead of anything previously attempted either at the Toronto Industrial or the November Shows.

Dynamite in the Orchard

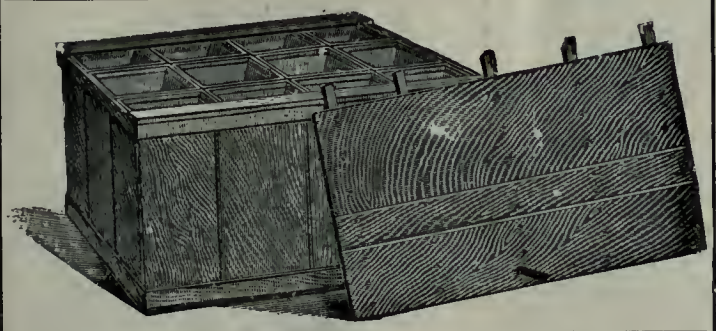
A number of new uses for explosives in agriculture are described by Mr. F. H. Gunsolus in the Journal of the Franklin Institute. In the north-western Pacific states dynamite is largely used for clearing land of tree stumps; but a more novel application is to drill holes from two to five feet into the soil and to explode dynamite cartridges in them, in order to break up and loosen the subsoil. This process may be carried out on land where orchards have already been planted, the quantity of dynamite used varying from twenty-five to one hundred pounds an acre.

Explosives are also being used very largely in the western states for digging ditches, especially in swampy clay ground. Slanting holes are punched at intervals of about two feet along the line of the proposed ditch; the middle hole is loaded with two or three cartridges, the explosion of which serves to detonate the charges in the other holes, with the result that a mile or more of ditch may be blasted simultaneously.

The Ontario Department of Agriculture has issued Bulletin 197 by the fruit branch entitled "Bee Diseases in Ontario." This bulletin is written by Morley Petit, provincial apiarist. Bulletin 198, entitled "Lime-sulphur Wash," by L. Caesor, of the Department of Biology, is interesting and timely. In this bulletin an attempt is made to give the results of the latest investigations and experiments on the making of the lime-sulphur wash and the various uses to which it can be applied. Bulletin 199, entitled "Onions," by A. McMeans, of the O.A.C., Guelph, is a reprint from the report of the Ontario Vegetable Growers' Association for 1908.

BASKETS

We are Headquarters for
all kinds of Splint Baskets



Veneer supplied for the protection of trees from mice during winter

FRUIT PACKAGES A SPECIALITY

SEND FOR OUR PRICES

The Oakville Basket Co., Oakville, Ont.

Mention The Canadian Horticulturist when writing

You Get

BETTER PRICES

For

APPLES

Packed in

BOXES

Up-to-date growers and shippers have demonstrated this fact. We make the boxes. Write us.

The Firstbrook Box Co., Ltd.
TORONTO

Are You Setting Out Your Trees as Economically as Possible and are the Trees when Planted Giving The Best Results Obtainable ?

Let Us Send You FREE OF CHARGE our Pamphlets on the use of

STUMPING POWDERS

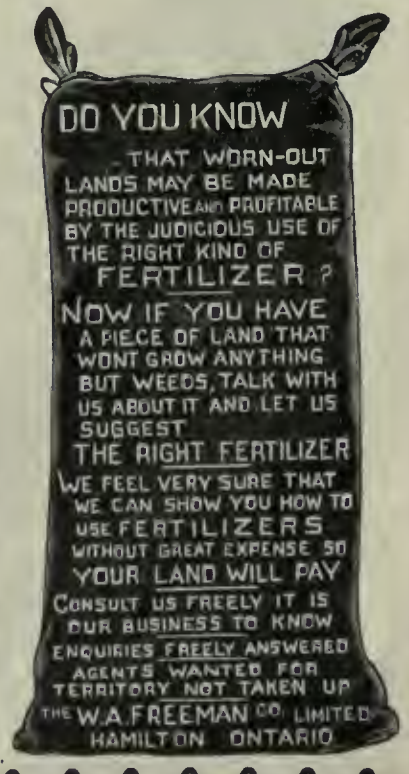
USED FOR

Planting Trees
Cultivating and Rejuvenating Orchards
Breaking Hard Pan, Shale and Clay Sub-Soils
Removing Stumps and Boulders
Digging Wells and Ditches, Etc., Etc.

Write us in regard to arranging
FREE DEMONSTRATION

CANADIAN EXPLOSIVES, Limited
MONTREAL, P. Q.

Fertilize Your Lands



Try it—test it—see for yourself — that "St. Lawrence Granulated" is as choice a sugar as money can buy.

Get a 100 pound bag—or even a 20 pound bag—and compare "St. Lawrence" with any other high-grade granulated sugar.

Note the pure white color of "St. Lawrence"—its uniform grain—its diamond-like sparkle—its matchless sweetness. These are the signs of quality.

And Prof. Hersey's analysis is the proof of purity —"99 99/100 to 100% of pure cane sugar with no impurities whatever". Insist on having "ST. LAWRENCE GRANULATED" at your grocer's.

ST. LAWRENCE SUGAR REFINING CO., LIMITED, MONTREAL. 66

To Have Healthy Hair

you must care for it. If dandruff is present, first eliminate it by using Na-Dru-Co Dandruff Eradicator for three or four weeks, then tone up the scalp with

NA-DRU-CO Hair Tonic and Dressing

This valuable preparation is absolutely free from coloring matter, or from any chemical that can affect the color of the hair in any way. Its daily use is a pleasure that is as beneficial as it is refreshing.

Na-Dru-Co Hair Tonic and Dressing and Na-Dru-Co Dandruff Eradicator are put up in 50c. and $1.00 bottles. Ask your Druggist for them.

National Drug and Chemical Co., of Canada, Limited

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NA-DRU-CO TRADE N D & C C MARK

Potato Canker

Prof. J. E. Hewitt, O.A.C., Guelph, Ont.

Mr. H. T. Gussow, botanist, Dominion Experimental Farm, Ottawa, has already, through the press, called attention to this most destructive potato disease, and the great danger of its being introduced into Canada in imported seed potatoes. On account of the serious loss to the farmers of Ontario which the introduction of potato canker would cause, it is not out of place to again warn all interested in potato growing to be on the watch for potato canker in the seed potatoes. A careful scrutiny of the seed potatoes should enable anyone

The Potato Canker

to detect the presence of the canker. Badly cankered tubers can be noticed at a glance, as they are misshapen and completely covered with warty excrescences. Badly diseased potatoes, however, are not likely to be found in the seed, but tubers which are only slightly affected and which at a casual glance appear sound. These may be detected by examining the eyes, which will be found to be slightly protruding and composed of clusters of little nodules. The accompanying illustration shows the disease fairly well developed at one end of the tuber. Potato canker is now found in England, Ireland, Scotland, Scandinavia, Germany, France, Italy, and Newfoundland. On account of the shortage of the potato crop in Ontario last year, large quantities of potatoes are being imported, especially from Great Britain. The danger lies in the planting of imported potatoes infected with the canker. Farmers should make a point of knowing the source of the seed potatoes they are using, and of making a careful inspection for any signs of canker before planting. Suspected potatoes should be sent to Mr. H. T. Gussow, botanist, Dominion Experimental Farm, Ottawa, or to the Botanical Department, O.A.C., Guelph, for examination and report. On no account should any suspected potatoes be planted until a report upon them has been received.

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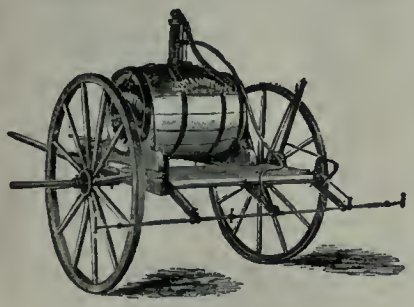

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Nova Scotia Growers Active

Manning K. Ells, Sec'y., N. S. F. G. A.,
Port Williams, N. S.

A large and representative number of fruit growers met at Kentville on April 12th to hear the report of the delegates to the fruit conference at Ottawa, and to listen to addresses from prominent men on live fruit questions of the hour.

President S. C. Parker took the chair and called on John N. Chute, of Berwick, the "Father of Cooperation" in the Valley, to tell of the present status of cooperation work, and what development was looked for.

Mr. Chute took up his subject from a business standpoint, and briefly reviewed the work and growth of the cooperative movement for the last five years. He showed that the question was not a local issue, but a world-wide movement, in which producers everywhere were finding a way to improve their condition, and place their products on the market in the best possible manner. In his own company at Berwick the average price for the seven leading varieties for the last five years had been as follows: No. 1, $2.64; No. 2, $1.88, and No. 3's something over $1.00 per barrel. Twenty-five companies are now organized in the Valley.

A central association was organized and had started work the past season. Nearly $300,000 worth of business was done this first year, which speaks volumes for what can be done when the companies are all working together. The central association can handle the question of transportation, can attend to the buying of fertilizers and other supplies and in many other ways assist the local companies. In fact, the central association should be to the local companies what the local companies are to the individual. Mr. Chute's address was worthy of the careful attention it received.

Dr. Cutten, president of Acadia University, spoke on the benefits of a meteorological station to the fruit growers of the Valley. It was found by experiment that the temperature and rainfall of the preceding year had a great effect on the various crops of the year following, and by keeping a careful record for a term of years of the precipitation, high and low temperature, frosts, winds, etc., data of great value to farmers and fruit-growers could be secured. Some work had been done along this line at Wolfville, and the late government had sent some instruments which had not been installed, and the new directors from Toronto seemed to be under the impression that the station was not needed. Dr. Cutten read a letter from the State Climatologist of Ohio, giving an account of the work there; and the benefits derived. After some discussion of the location of such a station in the Valley the following resolution was carried:

Whereas valuable results have been obtained in other countries by ascertaining and recording, for future guidance, complete local meteorological records.

And whereas the closer connection of monthly temperature and rainfall with crop production is a matter for the fullest investigation (and whereas some work of this nature is now being carried on at Wolfville).

Therefore, resolved that this association respectfully requests and urges upon the Federal Government an expansion of this work and the equipment of a complete station from which daily weather forecasts may be furnished to farmers and fruit-growers by mail, telephone, telegraph, signals, or otherwise of such a naturo as to warn them of injurious frosts or high winds during the growing season, or probable temperatures to be met with by fruit in transit during winter.

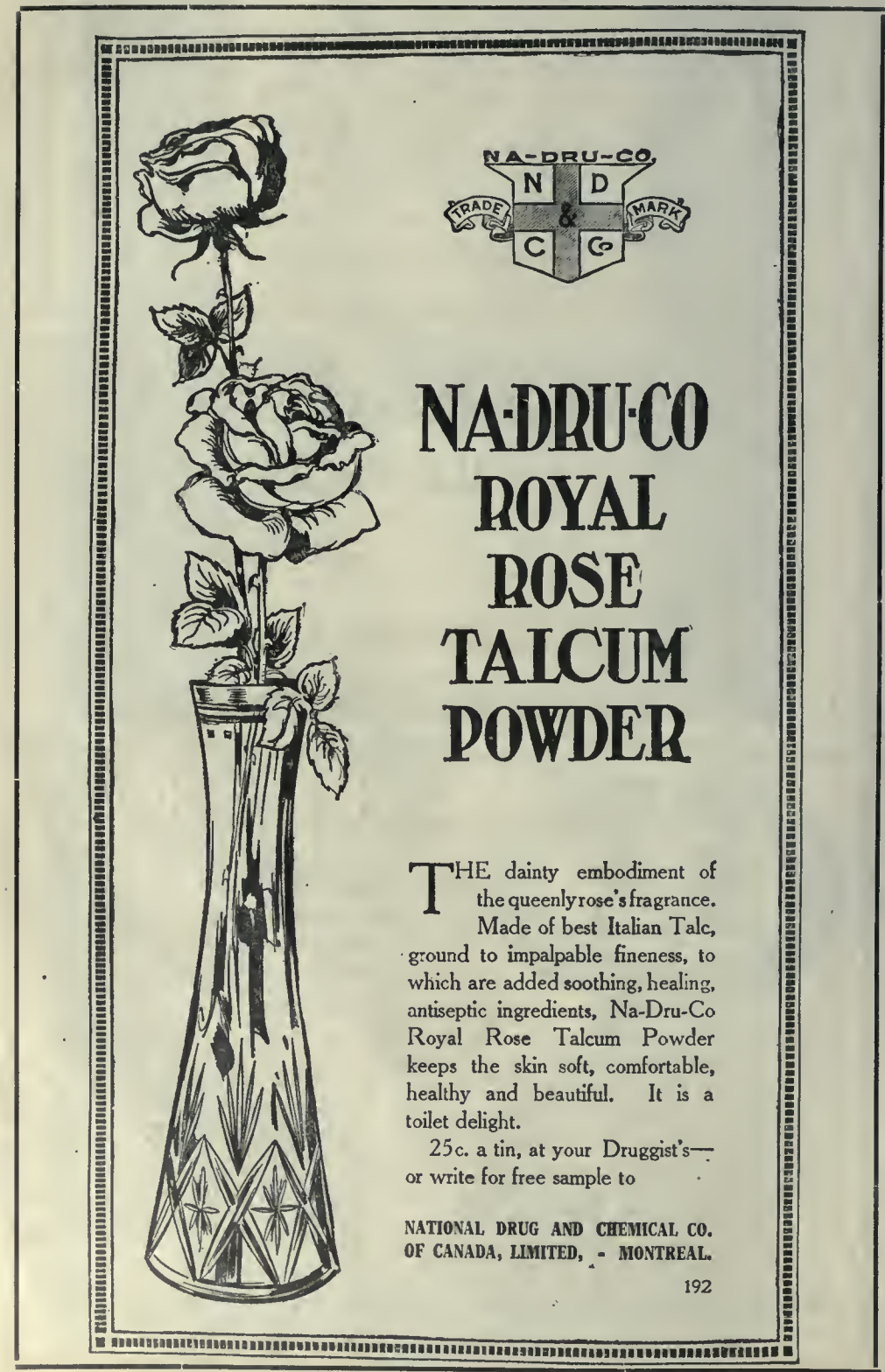
Captain Allen, the delegate from the United Fruit Companies to the Ottawa Conference, gave an account of the work in the conference upon the standard barrel question. "If," he said, "Canada cannot accept one size barrel, would it not be better to adopt two standards, the 96-qrt. barrel as used in Nova Scotia and the 112-qrt. barrel as used in Ontario?"

Geo. H. Vroom, the Dominion Fruit Inspector, read the law which calls for a minimum barrel as follows: 26 1-4 inches inside measure between heads. Diameter of head, 17 inches, diameter of bilge 18 1-2 inches, holding as nearly as possible 96 quarts.

Mr. Vroom then exhibited three sample barrels of standard, but varying in bilge as follows: No. 1, 18 1-2 inches; No. 2, 19 inches; No. 3, 19 1-2 inches. They held 97, 99 and 101 quarts respectively. No. 1 was the right size for the present minimum barrel, but in practice it was found not strong enough, because of the small bilge. He suggested a head diameter of 16 3-4 inches and a bilge of 18 1-2 inches as a better barrel.

The secretary read some correspondence from Mr. McNeill, Chief of the Fruit Division, quoting the law as to the minimum barrel, and saying that this coming season

(*Continued on page v.*)



Canadian Gardens

(*Concluded from page* 144)

were edged with English Box (Buxus sempervirens), reminding one of the old English gardens. Inside of the box edgings are narrow borders of hardy perennial plants, that give the garden an attractive appearance in summer. The north boundary of this garden was taken up with a long range of glass graperies and greenhouses. In the graperies have been grown about fifteen varieties of the luscious French hothouse grapes. The fruit from these vines has been much enjoyed by many prominent people, including His Majesty King George when, as Prince George, he paid a visit some years ago to Inglewood, whilst an officer on H. M. S. Canada. In the lobby of these vineries is a fine specimen of the Chinese Wistaria.

In the fruit orchards, several acres in extent, are planted the finest kinds of peaches, apples, pears and plums, as well as of small fruits. Possibly the first shipment of apples to China from Canada was made from these orchards, about five years ago. The conservatory attached to the residence deserves some notice. A fine collection of palms, cycas, banana and other plants occupied this building.

Much more might be written about these gardens and grounds with which the writer is so familiar, but space will not permit. What has been written is very largely of a reminiscent nature. In a few years, and perhaps in less time, what has been written will be subject matter of history only. These grounds have recently passed into the hands of a local syndicate. The stakes of the surveyors now seen here and there indicate very clearly that at least many of the points spoken of will soon have city residences erected on them. The graperies mentioned have already been removed preparatory to building operations. It is to be hoped that some portion of these grand old gardens and lawns will be preserved as history marks of the early pioneer days of this now rapidly growing city.

British Columbia

A considerable reduction in British Columbia fruit rates has been made by the Canadian Pacific Railway as a result of conferences held last February in Omaha between the executive of the British Columbia Fruit Growers' Association and W. B. Lanigan, assistant freight traffic manager of the road. Since that time some correspondence has taken place on the subject and the reductions are now announced. The reductions apply to fruit shipped to the prairie markets.

The next quarterly meeting of the British Columbia Fruit Growers' Union will be held at Kaslo, July 30, during the holding of the first annual cherry show at that point.

The Department of Agriculture this year had seven power sprayers at work in different parts of the province, and an expert with each, who taught not only spraying, but also pruning, thinning and the cultivation of the soil as well. Difficulty was experienced in finding the right class of men to handle this work, but good results must follow. As a result of their demonstrations last year numerous power sprayers were purchased throughout the province and a carload went into the Okanagan country recently. When the department started the use of the power sprayer two years ago there were only two in the province.

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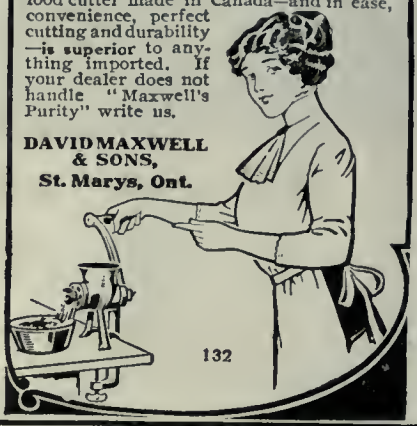

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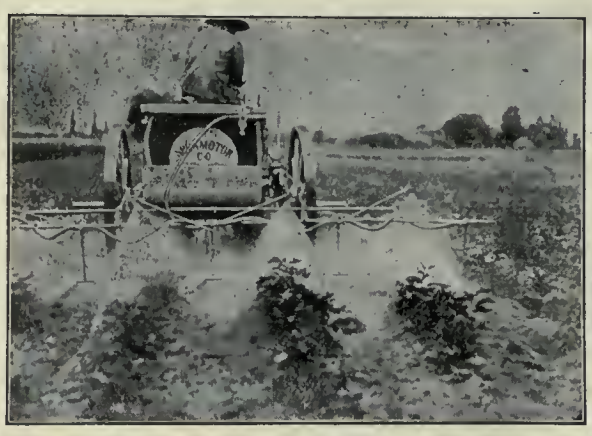

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Importations of nursery stock this season, according to Mr. Thomas Cunningham, Inspector of Fruit Pests, are higger than ever before. Some forty carloads have been inspected since the opening of the season, and sixteen men at the fumigating station were kept busy at the work. Mr. Cunningham reports that there was not quite so much infection thia year as formerly though there is still room for improvement in this respect. Nearly all the stock coming is American or European. There is nothing from Ontario this year.

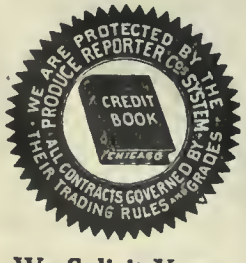
When asked recently as to the prospects for the coming year, Mr. Cunningham said: "The prospects for a bumper crop were never better. This is not only true of apples and pears, but of peaches and apricots. In the Okanagan Valley they have had favorable weather conditions and are almost sure to have the best crop ever grown in British Columbia. I shall be disappointed if we do not ship six thousand cars out of the Okanagan and Kootenay districts."

He added that he hoped one result of a good crop would be that there would be more local fruit sold in the home markets, as we have been too long displaying American fruit in our chief cities. We were also importing far too much nursery stock. There was not the slightest excuse for importing thirty-seven carloads this year, as the climate and conditions for raising nursery stock were as favorable in British Columbia as anywhere. Favored as we are by freight, duty and inspection, the failure to grow more nursery stock seems to be a reflection on the enterprise of British Columbia growers.

The Provincial Government has been asked to establish a demonstration station at Chilliwack, consisting of three acres, made up of one acre of Cuthbert raspberries, one half acre Logan berries, one half acre Snider blackberries, and one acre of Evergreen blackberries and also some rhubarb.

The Doukhobor Society, which last year operated the Columbia-Kootenay jam factory at Nelson, will this year move the factory to their own lands at Brilliant, north of Trail. The new factory will be equipped with the latest appliances and a high grade product only will be put up. The society is already contracting with ranchers in the district for this year's crop.

THE CANADIAN HORTICULTURIST is the best journal of its kind I have ever seen; it is most interestingly laid out, in fact a landscape garden of literature.—L. J. Pashler, Toronto.



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References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.

The Canadian Horticulturist

Vol. XXXV JULY, 1912 No. 7

The Thinning of Fruit

R. M. Winslow, Provincial Horticulturist, Victoria, B. C.

IT is only a few years ago that any of us first understood at all definitely what was meant by "thinning fruit." Now practically all commercial growers instinctively think of the removal of some of the fruits at an early stage in their growth, to permit of the greater perfection of the rest.

What was unheard of a few years ago becomes widely talked of to-day, and is the common practice of to-morrow. This has been the history of spraying throughout the apple districts, while pruning has gone through a similar evolution, though in a more irregular fashion.

Thinning as a feature of orchard practice on a large scale was probably first adopted in California, and was soon after applied to apples and pears in the producing districts of the Pacific Slope. It is in these districts that high freight rates and a long haul to markets has made essential the production of the greatest possible percentage of high-class fruit.

Only good fruit can be sold at a profit in western packages and under transcontinental freight rates, but the valuable lesson was learned that care in all features of production results, not in a minimum of profit, but in a maximum of profit; in other words the high expenditure per acre involved by intensive methods produces not a lower profit per box of fruit, but a higher one. The west has taken this lesson to heart and the changing market conditions are bringing it home to the east as well.

The British Columbia grower never asks himself if thinning pays any more than he asks whether pruning or cultivation produces a profit. About spraying, especially in those districts where San Jose Scale and the Codling Moth are unknown, and where Apple Scab and similar fungous diseases have never been seen by the average orchardist, he does raise a question, but the cost of pruning, cultivation and thinning he does not question any more than he questions the box package or the wrapping of high-class fruit.

Until varieties of peaches, apples and pears are produced that reach the commercial standard of perfection without pruning and thinning (and such varieties are a long way off as yet), these practices, which go hand in hand, will continue to be two of the most important in the orchardists' calendar.

In the east a similar view of the matter will in the near future obtain. Progressive growers will experiment and their results will shortly lead to the adoption of thinning as a part of orthodox orchard practice as it is now in the west.

HOW MUCH FRUIT TO A TREE

In discussing the questison of thinning we admit that a tree may set more fruit than it can possibly bring to perfection, as the fruit grower understands perfection. Nature cares nothing for the fruit except as an aid to produce seed; the orchardist cares nothing for seeds except as they are necessary to the production of fruit. We wish each tree to carry all the fruit it can bring to commercial perfection, and no more. At the same time the tree must make new vegetative growth consistent with its age and the variety. The third requisite is that it should also form enough fruit spurs for a similar crop in the following year.

When a tree is fulfilling these three requirements, it is performing its maximum duty to the owner. If it falls short in any of them he is not getting his maximum of profit, either immediate or prospective, from it. This ideal is the foundation of our orchard practice.

HOW DOES THINNING HELP?

The removal of some of the fruit at an early stage in its growth helps materially towards securing the maximum duty of the tree in certain definite ways:

First, the average size of the fruit left on the trees is increased; this is the most obvious result of thinning. Trees overburdened with fruit produce a greater percentage of number two apples. The increase in size of the remainder, after the first or second pickings of Bartlett pears is made, is a striking instance of the increase in size when the number of fruits is reduced.

Second, the fruit borne is more uniform in size and shape. On the overloaded tree there is much variation in size, and especially where two or more fruits remain on a spur they are variable in shape as well. The fruits from the side blossoms of the cluster are in many varieties much different from those from the centre blossom, usually being flatter

The Unveiling of a Monument at Dundella, Ont., Dundas County, in Honor of The Original McIntosh Red Apple Tree

A unique but noteworthy function took place at Dundela, Ont., during June, when prominent farmers, government officials and public men met to unveil the monument shown in the illustration in honor of the original McIntosh Red Apple Tree. The plate on the monument bears this inscription: "The Original McIntosh Red Apple Tree stood about 20 Rods North of This Spot. It Was One of a Number of Seedlings Taken from the Border of the Clearance and Transplanted by John McIntosh in the year 1746. Erected by Popular Subscription 1912." The occasion was marked by a basket picnic followed by addresses by speakers, who emphasized the importance to the country of the discovery of new varieties of grain or fruit of such recognized merit as the McIntosh Red Apple Tree.

in shape and having a considerably longer stem. Uniformity in size and shape is an important essential of commercial perfection.

Third, the color is materially bettered, more uniform, and comes earlier. The remarkable increase in color which occurs when a first picking is made from heavily bearing trees of even the winter varieties such as Jonathan and Wagener, furnishes a striking confirmation of this point. While color seems largely related to sunshine, it is a well-known fact that on a heavily loaded tree the fruit has less color less evenly distributed, and more slowly acquired.

Fourth, thinning improves the quality. This is especially the case when the soil is deficient in moisture or plant food.

Fifth, the fruit is freer of diseases and insect pests because wormy apples, limb-bruised or diseased fruit of any kind can be removed at thinning time. On plums and peaches in moist regions, fruits thinned so that no two touch when fully grown, are much freer of brown rot.

Sixth, the removal of misshapen fruit lower the percentage of low grade fruit.

Seventh, thinning prevents premature dropping. A familiar instance is that of the McIntosh Red, which is especially liable to drop where two fruits are left on one spur. Premature dropping is quite largely due to the inability of the tree to supply moisture to an excessive crop.

Eighth, the load of fruit is more evenly distributed, and this is a very important feature in preventing the breaking down of trees.

Ninth, the cost of picking is reduced considerably, and the labor of packing is divided more evenly over the season. This is an important advantage where the supply of labor is deficient in picking time. The costs of grading and packing are also much lessened.

Tenth, less fertility is removed from the soil; a ton of apples takes out approximately 1.2 pounds of nitrogen, 1.6 pounds of potash, and .6 pounds of phosphoric acid. A ton of pears removes the same amount of nitrogen and about twice as much of the other elements. The seeds take the great bulk of these amounts, the pulp of the fruit taking but a small portion. As the number of seeds is roughly in proportion to the number of apples, and not to their size, the removal of fruits leaves a much greater supply of plant food for the balance of the crop, for the growth of the tree, and in the soil.

Eleventh, the tree is less liable to winter injury. The extensive injury suffered throughout Ontario by the hard winter of 1903-4 fell mainly on the trees which had borne an overload the previous season. This is a natural result because the ripening of the crop drains the vitality of the tree, so leaving it in poor shape to withstand the winter. Trees bearing moderate crops for which there is an adequate supply of plant food, and an adequate supply of moisture, have sufficient vitality to ripen the crop, and to ripen the fruit buds and new shoots as well.

Twelfth, one of the most important results of thinning is that the trees will bear a larger and more uniform crop the following year. The tendency towards biennial bearing is materially reduced, much depending in this, however, on the variety.

For various reasons, then, thinning helps materially to secure the maximum duty from the tree.

WHEN TO THIN

As soon as the crop can be determined and the supply of labor permits, thinning should be commenced. Start with those varieties which are most advanced. Generally, apples, pears, and peaches are thinned when about the size of a hickory nut, and the thinning should be completed before they are more than double that size. On the various plums the work should be commenced as soon as possible after the dropping, familiarly known as "the June drop," is over.

Apricots, cherries, and crab apples are not usually thinned by hand, because the crop which they are to bear is a reasonably certain quantity, and can be controlled to a greater extent than in the larger fruits by proper pruning. The Italian prune and the Peach Plum are not usually thinned because normally the set of fruit of these varieties is not great enough to necessitate the expenditure.

HOW TO THIN

To set rules for thinning is even more difficult than to set rules for pruning. The fruit grower must determine for himself just how much crop the tree will be able to carry. Much depends on the variety, the age of the tree, its vitality, the soil, cultivation, climate, and district. Under equal conditions the Winesap may be thinned to say five inches, where the Jonathan would be thinned to six or seven, and the Northern Spy to eight. In climates such as that of Vancouver Island, where no irrigation is available, and the rainfall averages about half an inch per month during the growing season, or one-fifth that of the average Ontario district, all varieties are thinned to a greater distance than in districts of greater rainfall or where irrigation is available. In this district it is advisable to thin many crops, the whole of which could be carried to advantage under other conditions. Unhealthy or diseased trees should not be expected to grow as great a load as those in perfect health, while trees making extensive growth may very well be allowed to carry much more than average trees under the same conditions.

By one rule which is practised to some extent, the grower sizes up all the conditions and determines how many boxes of fruit the tree should carry. It is a small matter then to determine how many fruits there should be left on the tree. The results at first are likely to be considerably off the estimate, but this is very largely a matter of practice and variation of seasons.

Another rule which might be taken in conjunction with the previous one, is to thin plums to about two, two and a half, or three inches, peaches four to eight, depending on the earliness of the variety; pears and apples, five to seven inches apart. In thinning pears and apples, it is only with early varieties that more than one should be left on any fruit spur, and with these early varieties part of the crop may be removed in one picking, and the balance later.

With winter varieties of apples it is a good rule to leave fruit only on each alternative spur, to encourage annual bear-

(*Concluded on page* 180)

Dynamite in the Orchard

A. D. Harkness Supt. Experimental Sta., Jordan Harbor

Early in May several tests were made at the Experiment Station with dynamite as a means of loosening the subsoil for the planting of nursery stock and for the purpose of subsoiling in a mature orchard. In our mature apple orchard, we took a row of eight trees and put in twenty-five charges of dynamite. They were put in in quarter pound charges midway between the trees about thirty inches deep and a charge at each side of the trees at about ten feet from it. The subsoil in this orchard is quite hard. The explosion loosened the soil from three to three and a half feet deep and about three feet in diameter. The soil could be easily shovelled without blowing it out of the hole. In shovelling out the loosened soil, cracks could be seen, showing that the explosion had shattered the soil for a considerable distance. We will note the results, if any, in the crops of apples on these trees.

We also used it to loosen the soil for planting trees in eighteen holes, six plum, six pear and six apple trees, using the same amount of dynamite with the same result in the soil. In this test the soil was much heavier and harder than in the apple orchard. In this test we have trees from the same nursery, of the same age, and from the same part of the nursery, planted in the autumn in dug holes, planted in the spring in dug holes, and planted in exploded holes. I am making photographs of these trees as planted, and will make a record of their growth by photographs as well as notes.

The explosion loosens up a large hole in the ground, and it is necessary to see that the loosened ground is settled back again before the tree is planted. It enables one to take out the subsoil and fill

A Cover Crop of Clover in the Orchard of S. Carruthers, Oakville, Ont.

in with surface earth, and when the soil is hard with a hardpan. I think that a person would be well repaid for the extra expense in planting.

The holes are made with an augur made for the purpose or with a well sharpened crowbar. A hole can be put down thirty inches in a very few minutes. The dynamite that is used for this purpose costs thirteen cents a pound and one-quarter of a pound is sufficient for one hole. Caps cost one cent and fuse about one cent, making a total cost of about six cents a tree.

Cover Crops for the Orchard

Prof. C. A. Zavitz, O. A. C., Guelph, Ont

DURING the past twenty years, a large amount of experimental work has been conducted in the different uses of farm crops. This is particularly true in the uses which have been made of farm crops other than the production of grain or of fodder in the regular way. The terms "cover crop," "green manure crop," and "catch crop," have become quite familiar in our regular agricultural operations. The term "green manure" is used when a crop is plowed under for the object of enriching the soil. That of "catch crop" is used when a crop is grown between the regular periods of two ordinary crops so as to make the best possible use of the land, and the term "cover crop" is used to apply to those crops which are sown in midsummer to cover the land during the latter part of summer and the autumn, and frequently during the winter and the early spring.

LOSS OF PLANT FOOD

A few years ago the use of the bare summer fallow was general throughout Ontario. It was thought by many farmers that the bare fallow was absolutely necessary in order to kill the weeds, to liberate plant food in the soil, to preserve soil moisture, and to thus furnish a proper seed bed to the following crop, especially winter wheat. Investigations carried on at our Agricultural College at Guelph and at other institutions show that there is a danger of a considerable loss of soluble plant food by means of the drainage water from the bare summer fallow.

The writer made determinations at the Ontario Agricultural College several years ago, in which the drainage water was collected, measured ,and analysed monthly from each of six different soils in each of three or four years. The soils were divided into three groups, each group consisting of three samples. In one group, the soils were sand, clay, and loam, which were cropped continually. In the other group, the soils were all loam, one being cropped constantly and the other two were bare fallow and winter wheat alternately. Careful determinations were made of the amount of rainfall each month and of the drainage water passing through the different soils.

THE RESULTS

It was found that the loam soil which was used as a bare summer fallow furnished a greater amount of drainage water than the combined amount produced by the other five lots of soil. It was also found that the drainage water from the summer fallow was richer in soluble plant food than the drainage water from any of the other soils. It was found, moreover, that the percentage of plant food in the drainage water from the bare summer fallow increased from month to month during the summer and the autumn, or in fact until the ground became frozen.

These results were both interesting and suggestive. The present practice of Ontario farmers in discarding, to a great extent, bare summer fallow and instead cultivating the land in the early part of the season, and sowing a cover crop in the middle of summer, has many advantages on the ordinary farm, and especially on the fruit farm.

COVER CROPS FOR THE ORCHARD

It has become the practice by a number of our best growers to cultivate the soil during the early part of the season and to sow a cover crop in the orchard about the middle of summer, usually in the month of July. This system has many advantages. From what has already been said, it will be seen that there is likely to be very much less waste in soluble plant food esecially the nitrates in leaching through the soils and being wasted in the drainage water.

If leguminous crops are used, the soil is likely to be considerably enriched in nitrogen through the influence of the nitrogen gathering plants. These advantages would prove almost equally true, whether in connection with ordinary farming or with fruit growing. In connection with fruit farming, however, there are several other advantages, such as the checking of the growth of the trees so that the wood can become ripened and somewhat hardened before the winter season, the protection of the roots of the trees during the winter, and the better control of soil moisture.

By means of the cover crops, the amount of humus in the soil is considerably increased, which not only increases the amount of the plant food in the soil, but also greatly increases the power of the land to retain moisture and makes the soil more friable and less liable to bake and form cracks on the surface in the hot, dry weather. The humus content of the soil has also a marked influence in giving the proper environment for bacterial development and in the promotion of nitrification. It might safely be stated that the proper use of cover crops improves the chemical, the bacterial, and the physical properties of the soil, each of which has its own value.

KINDS OF COVER CROPS

No cover crops will prove the best under all circumstances. The kinds which are selected for the best results on any farm will depend considerably on the particular requirements, and on the local conditions.

In some instances, it may be desirable to have a cover crop which can be sown in July and which can be plowed under in the autumn. In such cases, buckwheat, rape, common field peas, or soy beans might be mentioned as likely to be amongst the best. Of these, the peas and the soy beans are leguminous crops and would be of the most value in enriching the soil. In an experiment which was conducted at Guelph on four differ-

The Three Year Old Peach Orchard of A. Baker, Niagara Peninsula
(Note how low these trees are headed).

ent occasions, in comparing field peas and buckwheat as green manures, it was found that the former surpased the latter by twenty-two per cent. as shown by the crops which followed.

In many instances, fruit growers desire to sow their cover crops in the middle of summer and to leave the crops on the land until the following spring. In that way, greater advantages are usually obtained. If suitable crops are used, there is frequently a good growth in the early spring, which can be plowed under and incorporated in the soil. For this purpose, such crops as the Hairy Vetches, Common Red clover, Mammoth Red clover, Alfalfa, and Winter rye form a list from which a selection can be made. These are all leguminous crops with the exception of Winter rye.

About ten years ago, the writer suggested the use of the Hairy Vetches as a cover crop for orchards in the fruit-growing district in the Niagara peninsula. Seed of the Hairy Vetches was furnished by the College for the purpose of experimenting. A number of the fruit men have used the Hairy Vetches with a good deal of satisfaction. They usually form an excellent matting over the ground in the autumn which, in nearly all cases, survive the winter and the growth in the following spring is fairly rapid.

There is probably no crop which adds a larger amount of rich vegetable matter to the soil than the Hairy Vetches. Unfortunately, the seed being mostly imported from Europe is rather expensive. As the seed is now grown in Ontario, however, to a limited extent, this difficulty will be partly overcome through a supply of seed which might be obtained at a less cost per bushel.

Alfalfa usually makes a good growth when sown on well cultivated land about the middle of July. It is a rich leguminous crop, but does not obtain its full growth until the third year; hence, when plowed in the following spring after it has been sown, both the tops and the roots are rather slender and there is not apt to be as large an amount of vegetable growth as is obtained from the Hairy Vetches.

As the Alfalfa is a very deeply rooted plant, it would not be wise to allow it to grow in the orchard much beyond the following spring after it has been sown, as there would be a danger of the Alfalfa roots taking the moisture from the soil, which should be available to the trees. The Common Red and the Mammoth clovers are well known in Ontario, and both have given good satisfaction as cover crops. These and the Hairy Vetches fill in an important place where hardy leguminous plants are required as cover crops.

Handling the Berry Crop

Grant S. Peart, Burlington, Ont.

If some berry growers were to make a thorough study as to what class of berry fruit was mostly demanded by the Ontario consumer, they would at once and forever be relieved of the old-fashioned idea, "that fruit being fruit, would sell as fruit, no matter what sort, or how it was packed." Now we admit that the consumer is sadly in need of further enlightenment with regard to selecting the better varieties from poorer ones, but he is wideawake when called upon to choose between poor and tastefully packed fruit. It is then an advantage to every shipper's reputation when their berries appear on the market looking fresh and attractive.

In order that berries may arrive on the market in prime condition, they should not be packed when wet with dew or rain. Many growers claim, however, that they cannot afford to discontinue picking until the dew is off in the morning. It is important, nevertheless, that dampness be avoided when handling the berry crop. Shippers in the Burlington and Oakville districts would probably take keen exception to postponing the picking on account of dew, for it is an advantage to be proud of, that owing to direct train service, Toronto citizens are provided with morning picked strawberries and raspberries for breakfast.

A bruised berry will commence to decay very quickly. Consequently they should receive as careful handling as possible. Sometimes damage is done by overfilling the boxes. It is a good plan when packing each box to shake down gently and fill to approximately one-quarter inch above level. This prevents further settling in the boxes and also does away with crushing the berries.

The common and I believe the most practical way to pick gooseberries is with leather gloves. Strip the fruit and leaves into baskets and pass through a fanning mill. The berries are firm and will not suffer. It is also claimed that no harm is done to the bushes because the leaves have passed their usefulness to the bushes before picking commences.

Summer Pruning

Prof. E. M. Streight, Macdonald College, Que.

Pinching or stopping is a method of summer pruning whereby robust shoots are checked at any desired height by removing their extreme points with a pinch between the finger and thumb. This process retards for a time the extension of such shoots and induces the more active growth of laterals. For the control of some plant diseases pruning is effective. Fire blight of apple trees may be controlled by cutting out diseased branches and cannot be done in any other way.

THE TOOLS TO USE

Only a few tools are necesasry for pruning. A knife makes a nice smooth wound, which heals readily, but may be used only on very small limbs. A pair of pruning shears is a necessity for small branches, and a pair of lopping shears for larger branches is equally necessary. One or more saws, fine toothed and of such construction that they may be worked to advantage among the branches, will be found essential. The numerous pruning devices worked by compound levers which are found on the market, are failures for the most part. Better let them strictly alone.

Judicious pruning facilitates the work of cultivation and spraying and determines to a large extent the fruiting habit of the tree, by making annual bearers of trees which formerly bore once in two years. The grower has everything to gain and nothing to lose, yet he should become acquainted with the habit of growth of different varieties, so that he may work more intelligently. The upright varieties may be spread somewhat by pruning to the outside laterals, and the spreading kinds may be contracted by cutting to those which have an inward direction.

Canadian Gardens---A London Prize Garden

A. J. Elliott, Aylmer, Ont.

ARTICLE No. 7

IN a pretty situation, that of 29 Garfield Street, London, Ont., lives a most enthusiastic lover of flowers, Mr. Wm. Bartlett, an Englishman. Mr. Bartlett's prize record stamps him as a successful grower, while his enthusiasm would convince anyone that growing flowers properly is the highest form of enjoyment one can find.

Last year Mr. Bartlett received from the London Horticultural Society first prize for best lawn, first prize for verandah, first prize for kitchen garden, and second for asters at the Agricultural Show, and two seconds at the Western Fair. While Mr. Bartlett's grounds were pretty at the time of my visit they would have looked better some few weeks later, as he is an extensive aster grower; in fact, these are his forte, as the large bed of some twenty varieties give promise of future blessings that he is now anticipating in the form of first prizes. He grows his plants in his greenhouse, and gives good, clean culture with the best rotted manure. This he claims is sufficient for almost any annual.

HOME-MADE GREENHOUSE

Mr. Bartlett is a great lover of petunias. The number of double and fringed varieties he possesses shows that his taste is refined and up-to-date. He has a greenhouse of his own construction. In it he raises his own plants, pots and pricks out his own stock, and, in fact, does all the work pertaining to such a useful building.

As you approach his home from the street you are pleased with the verandah, and do not wonder at his receiving a first prize, for the clematis covered building, in its several colours through the shades of white to the dark purples is simply fine, and it will, when its bank of asters planted in front of them are in blossom, be something worth seeing.

THE LAWN

On a level with the rear of the house, a neat lattice fence cuts off the lawn from the garden. The intervening space is filled with a nice piece of lawn flanked on the side nearest the house with asters and on the left hand side with a fine perennial border filled to overflowing with some very choice peonies, perennial phloxes, larkspur of all shades, Columbines, mullen pinks, roses, and perennial glows, which carry the eye to the end of this space, where a fine bed of grand tuberous-rooted begonias is situated. He has the finest plants of these beautiful flowers seen this year. When asked as to their culture, so far as he gives it, he stated that in the fall he takes them up, places them in boxes of sand, the bulbs just resting thereon, root side down, and stows them away in the house where they will not freeze. Towards spring he moistens the crown of the begonias with a very little water, and as the weather gets propitious, he plants them in pots and removes them to his greenhouse, which, by the way, is without heating apparatus, and shortly they take up the duties of life and develop into such grand plants as I saw.

THE DRIVEWAY

On the other side of the house is a driveway, and as Mr. Bartlett is in business as a drayman and consequently uses this road very much, as it leads back to his barn, chicken houses, and other offices, one would think that it might be a rough affair. Nothing of the kind! The perennial borders on either side of the drive are clean and unmarred by the hard usage one might imagine would come from constant driving through them. Here in profusion are all the perennials imaginable, interlaced with wild clematis and crimson ramblers, which prevent any detraction from what might be easily conceived to be an eyesore to a pretty home.

THE FLOWER GARDEN

We then pass through the lattice fence gate and find ourselves in his flower garden proper. The first thing that strikes one is a fine bed of roses nicely in bloom. Some grand specimens of the bedding varieties meet the eye. Although the past winter was very trying and hard on the wood these are bushed out finely and literally covered with buds and blossoms from the purest white to the darkest crimson. The whole is flanked and bounded by rows of beautiful pansies and dianthus. Then follow in succession his beds of asters and petunias. Of the former there is a bed of eight hundred plants comprising the best species of the kind, Gregos, branchers in all colours and names, Vicks, Globe, Comet, and twenty other varieties. Here, you can see, is Mr. Bartlett's "long suit." And here I might pause to ask, Why is it that all our successful growers of this grand annual find that Dreer, Henderson, Vick, and others of the United States supply them with so much better seed than do our own Canadian growers? It should not be so, but it is true in my experience, and should not obtain.

THE VEGETABLE GARDEN

Passing through another gateway we enter the vegetable garden. In it is found all that could well be expected in such a place. The wet spring rendered the clay soil backward in bringing the vegetables along, but Mr. Bartlett is sanguine that all is well here too.

One is struck with the absence of weeds, cut worm, and club root from the plants. Mr. Bartlett believes that it is due to the fact that as soon as practicable he lets his large flock of chickens loose, and he claims that they do wonders in keeping the crop of these nuisances down the following year. Lack of time made it impossible to obtain the photographs of this garden that should accompany this article. The garden, as we trust will be seen, is one that will afford delight to every true lover of flowers who may be privileged to visit it.

The Front Approach to Mr. Bartlett's Prize Winning Garden

Summer Care of Sweet Peas

Ernest Heggs, Hamilton, Ont.

Much thought has been given with regard to the best method of supporting sweet peas. Wire netting is extensively used, but training the plants up the wire requires a lot of attention. High winds also dash the blooms against the wire, and cuts them. Hazel sticks are the best when they can be procured.

When you have planted the seedings out, give them short twigy sticks. The plants thus obtain a good start to climb. Give them their flowering sticks when they are about a foot high. These sticks should be from seven to eight feet high. Have two strong poles at each end of the row, and run a strong cord along the row, about half-way up, so as to keep the sticks in position. Train the plants to come up on the outside of the row, so as to allow the air and light to penetrate through the row.

FEEDING THE PLANTS

Do not give the plants any liquid manure until they have been flowering for a little while, and then only once or twice a week. Soot water is excellent, if applied when of the colour of weak tea.

Strong doses of any kind of liquid manure are fatal to good results. A good plan is to spread some short manure, each side of the row, during July, which keeps the soil moist and cool. When the rains come it washes the goodness to the roots.

CUTTING THE BLOOMS

Always cut the blooms with a pair of shears at the base of the stem. The best time to cut the blooms is in the early morning or the last thing at night. The blooms last longest in a cool room free from draughts.

It is a mistake to give the cut flowers fresh water every day. Instead, put a pinch of salt into the water, and fill up every day with more. Cutting a little of the stems off every day makes the blooms last twice as long as they otherwise would. This applies to all kinds of cut flowers.

Culture of the Fuchsia

H. Gibson, Ottawa

The fuchsia likes a good deal of water, both at the roots and overhead. If the drainage is perfect and the soil light and porous it is difficult to give it too much. It must never be allowed to become dry at the roots or it will receive a check, and probably drop its leaves and buds.

As most varieties are of slender habit some support is needed. The use of racks or trellises is to be deprecated; they are heavy, unsightly affairs, and a plant trained on one is never very graceful. A very satisfactory support is a stout iron rod with holes punched five or six inches apart. Through the holes run a heavy wire, twisted in and out in such a manner that the loops in it project eight or ten inches on all sides of the rod. Do not attempt to make these regular; they will not be seen when the plant grows up, so it doesn't matter how they look when the frame is made. Tie the main stalk to the rod and let the branches dispose of themselves among the wires. Trained in this way a natural graceful specimen can be had, in contrast to the formal, prim, flat, rack-trained specimen.

Some varieties, like Little Beauty, are of a drooping habit and never look well trained in an upright position. Let them train themselves. A very good effect is produced when such a plant is grown on a bracket half-way up a window.

There seems to be an idea prevalent among amateur gardeners that the fuchsia is, or ought to be, a winter bloomer. Many persons keep them in the window hoping to get flowers all the winter. This they generally fail to do, much to their disappointment. It is not a winter bloomer save with one exception, and the place for the plants in the winter is the cellar or other frost-proof place. There they should go by the end of November, and there they should remain until the beginning of March. Give little water; in fact, no harm will come if they are kept so dry that they shed their leaves.

A First Prize Flower Garden on the Canadian Pacific Railway

The garden here illustrated, situated at the railway station, Markdale, Ontario, on the line of the Canadian Pacific Railway, won the grand prize offered last year for the Ontario division of this railway company. The garden was planted and looked after by the agent, Mr. John Caesar. The planting of flower beds of this nature at the stations of the great railway companies is a line of work that is meeting with increased favor on the part of the public. The flower bed on the left contains the name of the station, although the illustration does not show this very clearly.

Garden Notes

Keep the hedges clipped.

Lawn clippings and green waste from the garden make good chicken feed.

Keep the cultivator and weeder going. They not only kill weeds, but conserve moisture.

Keep the sweet peas picked. It is better for the plants, and the house can be made more attractive by their use.

Thin the apples and plums if too heavily loaded.

Chicken wire makes a good trellis for tomatoes. A single stake will do or a barrel-hoop supported about two feet from the ground by three stakes is good.

Keep the new strawberry bed clean cultivated until the runners are matted too much to permit the cultivator to go through.

If the strawberry plants are vigorous, and the bed not too weedy, it may pay to renovate it for another year. Mow the plants close to the ground, rake off the foliage and burn it. Plow a furrow, cutting out all but about one foot of the row, and then go through and take out the weeds and diseased plants in this row. Fill the furrow with thoroughly rotted manure and cultivate the soil back. Keep up a thorough cultivation of the soil all the season.

Stalk borers are the worms which make holes in the stems of lilies, dahlias, golden glow, peonies, and other flowers, causing the stalks to fall over. They come originally from weeds, and the eggs are laid at the base of certain weed-stalks in the fall, and hatch the following spring. A garden adjoining a weedy, neglected lot is apt to be troubled. Sticky tanglefoot of medium thickness, which can be bought easily in large quantities, applied over a space of three inches wide on the outside of the base-board of a fence, or a board barrier placed for the purpose, has been found to be an effective preventive, since the worms cannot cross the sticky band. This should be done early in the season, and calls for more than one application, in order to keep the barrier sticky.

Students Studying Floriculture at the Guelph Agricultural College

The Normal School teachers who gather each summer at the Guelph College take a course of lectures and demonstrations in floriculture. Some of the students are here shown in the rose garden.

My Favorite Flower and How I Grow It*

A. V. Main, Ottawa, Ont.

THE summer treatment required by geraniums is light. Remove spent bloom, keep stirring the soil till the foliage prevents you and during an exceptionally dry spell give a good watering in the evening. In a rich soil and rotted manure geraniums will scarcely suffer even in a dry season.

In October, before the frost cuts them down too much, lift the plants, trim off long shoots and bad leaves, put them into large pots or boxes about six inches deep and pack soil around the roots. Place them in a basement or in a cool airy room where frost is kept out. Give water every three weeks. During January and February withhold it altogether.

The plants I bring successfully through the winter are adapted for boxes, vases and other receptacles that add to the beauty and environment of a well-kept house.

In April I cut the plants good and hard, leaving about only three inches of wood, which soon sends out new buds. After their second summer of blooming, I discard the plants without a grudge, as the roots get old and matted they lack vigor and deteriorate in every way.

As a cut flower geraniums stand well, and in the fall or after the first snowfall, a vase of scarlet geraniums, with their bronze foliage, is always appreciated.

VARIETIES

Capital bedding varieties include the following: Double, John Doyle, scarlet; S. A. Nutt, brilliant crimson; Captain Flavelle, scarlet; La Favorite, white; Mdm. Jaulin, pink, semi-double; Marquis de Castelain, light crimson. Single sorts include, Fiance, pink; Mdm. C. Braunt, salmon pink; Flamingo, red. The silver leafed Mdm. Salleroi makes a nice border to a scarlet bed. The cut leafed scented geranium is an old time gem, cherished so much by our grandparents. The bi-colors and tri-colors commend themselves for their fine foliage display. Thus the geranium is in no way limited for variety.

POT PLANTS

Our favorite pot plants are specially treated for fall exhibition and winter blooming in the house. Prepare a good soil, equal parts rotted manure, loam, with sand added for porosity, also a six-inch pot of bone meal to a barrow load of the mixture. Do not sift the soil. Early in June repot the plants into six and seven inch pots instead of the flower bed. Plunge the pots in ashes in a sunny place. Keep them well watered all summer, remove every bud that shows, pinch back the growths and turn the plant once a week. The idea is to get a sturdy plant, having plenty of roots and with growths well matured.

Three weeks prior to the show I let the flowers come and continue feeding the plant twice a week with Clay's fertilizer and Peruvian guano alternately. At the approach of frost I place the plants in the sunniest window. If you do not over-water the geraniums the bloom will surprise you if the summer treatment has been fulfilled. In March cut the shoots back to four inches and in May repot into a larger sized pot or top-dress.

Towards the end of May gradually harden them off for their flowering quarters outdoors. I use a sunny aspect. A rich soil, half soil and half rotted manure, about twelve inches deep, suits me, with a sprinkling of that lasting fertilizer, bonemeal. When planting, firm the soil and allow fifteen inches to a plant. For two weeks pick off all flowers and buds, and pinch back any straggling growth. This is a heart-break to the ladies, but a valuable assistance to the geraniums, to make roots and recovery for its long flowering period June to October.

*Part of the essay that won first prize in the competition held last year for prizes offered by Mr. R. B. Whyte, of Ottawa, and Mr. Hermann Simmers, of Toronto.

Window Boxes

H. Gibson, Fergus, Ont.

When the lady of the house has planted her window box she sees in her mind's eye a wealth of bloom and beauty the future has in store. But this anticipated beauty is in many many cases never realized, hence the poor woman is disappointed and wonders why she failed to attain success. She says, "I bought good plants, had good soil, and I watered them myself every day. What more could I do? In less than a month the plants began to look sick, their leaves turn yellow and fall off. They seem to try to grow but the young leaves go just the same, look as if stricken with blight. In six weeks they are almost all dead. Was the fault mine? If so what is wrong with my treatment "

In nine times out of ten the failure results from lack of sufficient moisture at the roots. It must be borne in mind that a box of a foot or more wide, and nine or ten inches deep, and from three to four feet long, contains quite a large quantity of soil; to keep this moist requires liberal supplies of water in the summer. This many persons fail to realize and adopt the little and often method of watering, which only wets the surface soil, the soil beneath becoming in the meantime almost dust-dry. This explains why the plants flourish for a time and then begin to fade. They do well while the roots are in the moist stratum of soil, but as soon as they get through that they fail to find the moisture they need, and must have if development is to go on, and the result is failure.

To grow plants well in window boxes they should be thoroughly soaked through every morning during the hot weather, and it may require to be done twice daily when such hot weather is experienced as we had in Canada last summer. Make it part of your daily plan to water thoroughly every day, and above all never allow the moist appearance of the surface soil to deceive you.

The Celery Blights

Prof. E. M. Streight, Macdonald College, Que.

WHEN a farmer says "My potatoes have been struck by rust" or "My celery is going with the blight," what does he mean? When he speaks of controlling "blights" and "rusts," what does he hope to do? I find the greatest amount of misconception concerning the whole subject of plant disease, and when the expert explains the difficulty in the language of mycelium, conidiophore, uredospore, and teleutospore, he has not added much to the gardener's conception of the difficulty or the most approved method of combating the same.

We shall have made much advance when all men realize that every plant disease is also a plant. True, these forms are low down, but just as truly plants as the potato, celery, or other plant which they attack. These plants are not so much unlike other plants as many suppose, except that they are very minute —so minute that they are seldom seen with the naked eye, unless very many are aggregated together.

Early Blight on Celery Leaf. Fig. 1

The plant body is a mass of threads, which wind themselves back and forth through the tissue of the host, either through the cells or between them, and constantly suck up the elaborated food which the host plant manufactured for its own use, and which the fungus had not the power of manufacturing for itself.

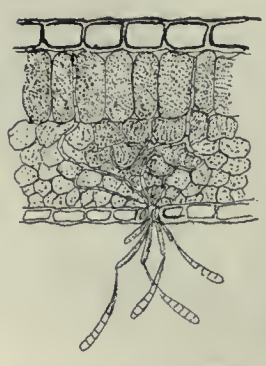
Very soon, usually, after the attack, the plant causing disease acquires the power of sending up little stalks. These little stalks bear spores, either singly or massed together. These spores, which correspond to seeds in the higher plants, are the common forms of reproduction. They are so light that they are easily blown by the wind from place to place, where they fall on other plants, germinate, attack the plant, and the whole life history is gone over again.

Late Blight on Celery Leaf. Fig. 2

A MISCONCEPTION

We must get away from the idea that warm, moist weather causes rust and blights. Climatic conditions, moist and warm, are usually favorable to the germination and proper development of the fungus, but it would be just as reasonable to say that warm, moist weather caused the oat crop. The truth is that heat and moisture are usually as necessary for the germination of the spore as for the germination of celery seed, but in neither case does it cause the plant.

If a seed of one of the higher plants were put in kerosene oil it would not germinate. In just the same way, there are many substances in which the spores of plant diseases cannot grow. One of the best of these is Bordeaux mixture. If a fungus is already within the tissue it is evident that the application of a fungicide, such as Bordeaux mixture, is of little avail so far as curing the malady goes; but even then it may hinder the spread of the disease. Prevention is the watchword.



Section Through Leaf. Fig. 3

Early blight. (Section through spot). Fruiting bodies arising through stomate of leaf, bearing spores.

If the leaves of plants are covered with some substance in which spores cannot germinate, it matters little how much disease there may be in the locality, or how many spores alight on your plants, so long as their armour is complete. True, the spores often work in between the joints of the armour. This necessitates careful and continuous spraying so that there may be protection for every part. Bordeaux mixture affords such protection.

Sample Spots. Fig. 4

This shows an enlarged view of the spots of Late Blight of Celery, showing the pustules or pycnidia.

It is well in this connection to remember that bluestone is the important and essential thing, but because of its solubility, we dare not use it in a pure state, as it would kill the plants on which it was sprayed, along with the fungus which attacked it. The lime of Bordeaux is simply to bring the bluestone in such a condition that it is no longer soluble in water. In this condition it simply forms a coating on the leaves without injury to the host plant, and at the same time hinders the germination of the spores. With these preliminary considerations we shall proceed more particularly to Celery Blights and their control.

TWO CELERY BLIGHTS

As with potatoes we have two blights of celery which are of great importance

Germinating Spores of Early Blight. Fig. 5

Spores of Late Blight on Celery. Fig. 6

—the Early and the Late. The one is often mistaken for the other. At certain seasons both are present at one time. As a rule the early blight is most destructive early in the season, and the late occurs in autumn. Its destructiveness does not end in the field, for the storage cellars often furnish conditions favourable for its rapid development, and the losses in many sections have been heavy.

The early blight begins on the outermost green leaves and rapidly spreads to the younger leaves as they unfold in freshness and vigour. It appears in spots more or less circular, greyish-green at first, and becoming brown and ashen. In the early stages of the disease there is a well defined spot with slightly raised

Celery Sprayed Nine Times with Bordeaux Mixture on the Left. Not Sprayed on the Right.

border; but when the spots become numerous on a leaf, the latter begins to turn yellow, and subsequently the fungus develops abundantly its fruiting growth in indefinite areas thus giving the characteristic ashen spots of indiscriminate form. This "early blight," Cercospora Apii, is seen on the leaf only, while "late blight" may occur on any part of the plant.

The "late blight" Septoria Petroselini Des, var. Apii, begins by attacking the lower outside leaves, where it is seen in small brown spots, which later turn black. These spots often form in clusters, but where the leaves are badly affected the clusters cover the entire leaf surface and these leaves soon fail to perform their natural function and die. In many cases, however, the blight does not confine its ravages to the leaves (leaf blades), but attacks the stalks (petioles) also. Here, again, it is seen in small black spots. The stalks soon turn brown, soften and finally shrivel up. Shortly after the appearance of the characteristic blight spots upon the leaves and stems, there may be seen small black pustules in the centre of the dead area. By referring to figures one and two an idea of the appearance of the two blights may be obtained.

THE SPOT

A minute study of the "spots" shows great differences. In the early blight, a section through the spot simply shows the threads of fungus ramifying through the tissue, the fertile filaments, or hyphae, protruding through the pores or stomates of the leaf. These fertile hyphae, as seen under the microscope, are illustrated in figure three. It will also be seen that these bear transparent reproductive bodies, or spores. In late blight pustules or pycnidia are found, and the spores are contained in these These pustules are visible to the naked eye and appear as black specks. Under the microscope they appear as figure four.

The spores of early and late blight resemble each other. In both cases they are long and narrow, and may or may not be slightly curved. They are transparent (hyaline) and usually have cross partitions (Septae). Usually the spores of early blight are more club-shaped, and have not as many septae as in the late blight. These spores appear as threads. In both cases they are very light, are blown by the wind and under favourable conditions germinate quickly. Figures five and six show the spores, and also their manner of germination.

THE PLANTS

The character of the entire plant is also very different in the two diseases. In the early blight the plant may have a gnarled stunted appearance, but never loses its stability; while in Septoria the stalk becomes soft, wilted, and eventually dries up.

Considerable confusion exists regarding the nature of the season during which this early blight is most prevalent. It has been reported most abundant during hot dry periods, and also most injurious during warm "muggy" days. In my own experience the disease develops best during hot weather, and is not much dependent on moisture. The ordinary dews are quite sufficient for its rapid development. As autumn approaches with cooler rains, the fungus disappears to a great extent. At Macdonald College this disease was followed by the late blight. This latter malady was not serious in the field, but the fungus is still active in the cellar, and is causing considerable injury.

CONTROL

Despite the failure of Bordeaux mixture as a preventive in the field for Cercospora Apii in many localities, we are satisfied that, when faithfully applied, the disease may be controlled by Bordeaux. The accompanying photographs show plants from the field sprayed nine times with Bordeaux, and beside them some plants not sprayed at all. The results are striking. The unsprayed plants are useless.

The spores of the fungus have been found to germinate after passing the winter on the dead leaves of the previous growth. This will suggest the necessity of destroying all refuse matter and diseased material as far as possible. The same disease is said to grow on the wild parsnip, so it may be as well to rid the fence corners of this plant.

CONTROLLING LATE BLIGHT

The late blight can be controlled in the field by fungicides and without greater trouble than in the case of the other. A nozzle with a large opening and high pressure should be used, so that plenty of the spray mixture may be forced right into the centre of the plant. This spraying for Septoria is important if celery is to be stored, so that a minimum of disease will be carried to the cellar. Badly affected leaves should be stripped away before consigning to the storage. The temperature should be low, so as to hinder the rapid development of any remaining spores. Good ventilation seems to be an important preventive factor, and the best evidence of this is afforded by the observation that the blight is less injurious along the central gangways of the cellar.

The usual Bordeaux mixture four-four-forty was used here, and we believe it to be as good as any. It has been urged by someone that Bordeaux mixture should not be used on celery in view of the fact that the leaf stems are eaten. It has been shown that a man must needs eat from one hundred and sixty-six to one thousand three hundred and twenty-eight heads of celery at one time to get a tonic dose of copper, and sixty-six thousand four hundred and forty plants would be required to kill, so the danger is not great.

USE GOOD SEED

As before referred to, in late blight the pustules containing spores may occur on any aerial part of the plant including the seeds (seed coats) and the pedicels on which they are borne. To the naked eye they appear as black specks. It is believed that the introduction and rapid distribution of the disease in this country is due to the importation of infected seed. One thing we know, the fungus often appears on seedlings. Good seed with celery is as important as good seed in other garden crops. Celery seed on which the pycnidia can be seen ought, of course, to be rejected; but diseased seed cannot always be identified at a glance. We believe that the time is coming when gardeners will pay more attention to saving their own seed. When this is done and seed saved from healthy plants and the best possible, we shall have made a long step in advance. We need not blame the weather when we introduce disease into the field in the blemished infected seed. This is usually the beginning of the end.

The Canadian Horticulturist

Published by The Horticultural Publishing Company, Limited

PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

1. The Canadian Horticulturist is published on the 25th day of the month preceding date of issue.

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3. Remittances should be made by Post Office or Express Money Order, or Registered Letter. Postage Stamps accepted for amounts less than $1.00.

4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.

5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.

6. Advertising rates One Dollar an Inch. Copy received up to the 18th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.

7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

June, 1912 12,112

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed
THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

MORE SWINDLERS

Year after year THE CANADIAN HORTICULTURIST has exposed swindle after swindle that was being perpetrated by so-called agents of nursery firms or other concerns that professed to have some new and wonderful discovery that was certain to enable those fruit growers who would take advantage to it, upon the agent's terms, to get rich more quickly than ordinary and proved methods allow. We have had wonderful varieties of potatoes and apples, compounds that if injected into the sap of fruit trees would prevent blights and other diseases, as well as innumerable other schemes, all of which have been fakes of the first order. In one instance THE CANADIAN HORTICULTURIST placed the provincial government on the track of a swindler, who was arrested and imprisoned.

Recently our attention has been called to the operations of agents of United States firms who are selling apples, cherries and other nursery stock at prices that such stock could not be grown for profitably. To facilitate their operations these agents are misleading the public by exhibiting specimen fruit in glass jars—without making allowance for the magnifying effect thereof—and assuring possible customers that under ordinary conditions the stock they are offering for sale will produce similar fruit. Promises are made that dead trees will be replaced for the next five years, although no reputable firm we have yet heard of has been able to make such an offer and continue in existence.

Were it not for the fact that a fresh crop of suckers seems to be always awaiting the operations of such sharks, we would hardly think it worth while drawing attention to this matter. As it is, we would advise our readers to be on the watch for these parties and to expose them should opportunity allow.

TRANSFORMING WASTE PLACES

Many towns and cities in Canada would do well to imitate the policy adopted by the city of Winnipeg this year in an attempt to utilize waste places and vacant building lots, and thereby beautify the city and establish more gardens. There has been established this year in Winnipeg an organization known as "The Winnipeg City Garden Club." Winnipeg, like all other municipalities, has many vacant building lots, a large number of which occupy most prominent corners. This is largely due to speculation in real estate. Immense bill-boards face these lots, or large wood piles are located on these spaces. To do away with this is the desire of this new organization.

For a fee of one dollar for membership the Garden Club offers to supply a vacant lot asked for by any applicant. They offer to plow, harrow and prepare the lot for planting; to furnish fifty cents' worth of seed free and to supply other seed at a cost less by twenty-five per cent than its list price; to give the member expert advice upon how to plant the land, and to supply expert inspection throughout the season. They also agree to furnish men to spade the home garden at cost to the club, and to assist in every possible way the planting of home gardens and vacant lots.

In Minneapolis and several other large cities in the United States the Garden Club has been in operation long enough to fully demonstrate its feasability and its success. Results have been most gratifying. The garden plan was accepted in Minneapolis by some three hundred and sixty people the first year, and twenty-two thousand five hundred square feet of formerly waste land was placed under cultivation. The gardens were all marked with neat signs, and were so well taken care of that only two of the three hundred and sixty to whom vacant lots were assigned gave up their gardens, and these because the lots were sold. Forty thousand tomato plants and eighty thousand cabbage plants were distributed among the vacant lot gardeners of Minneapolis last year, and it is estimated that these plants produced crops to the value of seven thousand or eight thousand dollars.

The Garden Club of Winnipeg is affiliated with all the departments of civic authority, including the Trades and Labor Council, Industrial Bureau, Real Estate Exchange, Horticultural Society, Canadian Club, Winnipeg Advertising Club, and Cottage Gardening Society.

THE DESERVING HONORED

The celebration that took place at Dundela during June, when a monument was unveiled in honor of the original McIntosh Red apple tree, is worthy of more than passing note. Hitherto it has been the custom to erect monuments mainly to great warriors and statesmen. The world has appeared to overlook the fact that reforms and improvements fraught with great importance to the human race are sometimes accomplished in the more humble walks of life by men whose names do not receive the recognition that their achievements deserve.

Of late years there has been a change in this respect. At last the public is developing a more just sense of values. Knightly honors and high degrees are being conferred on men who have promoted such humble callings as that of agriculture, as for example Mr. C. C. James, until recently Ontario's Deputy Minister of Agriculture. Even yet, however, it may cause a smile to some to know that a monument has been erected in Oxford County, Ont., in honor of the great Holstein cow Calamity Jane, an animal that did much by the great records she established to extend the practice of conducting official tests of the production of dairy cows.

In time we will come to recognize that men like the late Charles Arnold, of Paris, Ont., who originated the Ontario apple, and the late John McIntosh, to whom we are indebted for the McIntosh Red Apple, are deserving of the nation's thanks. It is encouraging, therefore, to know that this movement is progressing, as was shown by the erection of the monument at Dundela.

The fruit growers of Nova Scotia, and the local government of that province, deserve credit for the efforts they are putting forth to prevent the San Jose scale from becoming established in the east. Profiting by the experience of Ontario, which passed an Act for the eradication of this pest but made the mistake of leaving its enforcement in the hands of local inspectors, who in many cases were incompetent as well as afraid to antagonize their

friends, Nova Scotia has appointed provincial inspectors, from whom more efficient work may be expected. Vigilance and careful inspection of orchards and nursery stock may be expected to keep this pest from gaining a foothold in the east as they have in the west, and thereby save the Eastern growers hundreds of thousands of dollars.

The announcement that the Ontario Department of Agriculture will this year maintain a market commissioner in the prairie provinces, as was done last year by British Columbia, is a welcome one. Such action was long ago suggested by THE CANADIAN HORTICULTURIST. and later the proposal was endorsed by the Ontario Fruit Growers' Association. No time should be lost in placing a competent man at this work. His services should mean much this year to the fruit growers of Ontario.

It is gratifying to know that the grant of the Ontario Horticultural Exhibition will be materially increased this year. For years this exhibition suffered from lack of funds. Of late it has assumed such proportions that a more liberal government grant has been greatly needed. Now that this has been assured we may expect to see the exhibition attain still greater proportions and increase its usefulness to the fruit interests of the province.

It is to be regretted that Hon. Mr. Duff, Minister of Agriculture for Ontario, has not seen his way clear to divert a portion of Ontario's share of the Dominion Government's grant for agricultural purposes to the Fruit Experiment Station at Jordan Harbor. This station is not accomplishing the work that it might because of lack of funds. It deserves and should receive more liberal treatment from the Ontario government.

Ask !

Occasionally we get letters from some of our subscribers asking where they can buy a certain article, or line of goods. They have first consulted the advertising columns of The Canadian Horticulturist, but failing to find what they want they have come to us. We have, in almost all cases, been able to direct them to a reliable firm handling the goods they want.

You who read The Canadian Horticulturist will be requiring many and varied lines of goods during the next few weeks. You will probably, in the majority of instances, be able to find what you want advertised in The Canadian Horticulturist. But some things you may not find. If such is the case write us. It may be something for use in connection with your work in the orchard or garden, something for use in your home, or something for your own personal use. We probably have the information you desire.

We are closely in touch with reliable firms handling goods of almost every description. We are pleased to be of service to our subscribers and any information along this line you need and we possess will be readily given. Ask us.

And when consulting the advertisements in The Canadian Horticulturist remember that every one of them has our personal endorsation. They would not be there if we did not believe they were good firms and would give their customers a fair deal.

We do not admit advertisers to our columns except such as believe are thoroughly reliable.

PUBLISHER'S DESK

No feature that we have added to THE CANADIAN HORTICULTURIST during recent years has been more appreciated by our readers than our series of articles describing Canadian gardens. These articles are proving so popular we are planning to continue them after the first of the year. We desire your help. You must know of some garden in your vicinity worthy of being described in this series of articles. Will you not draw it to our attention in order that we may arrange to obtain photographs of it during July and August when gardens are at their best? We are particularly anxious to obtain descriptions of gardens in Montreal and other eastern cities as well as in the cities of the west. Officers of horticultural societies are especially urged to give this matter their attention. We are willing to pay for illustrations and articles of this class that prove acceptable. Let us hear from you.

Have you noticed the gratifying increase in the circulation of THE CANADIAN HORTICULTURIST as reported from month to month in the first column of the opposite page? The fact that the circulation of THE CANADIAN HORTICULTURIST during June was some 2,000 greater than for the same month a year ago, although we anticipate a slight falling back during the month of July, demonstrates the increasing popularity of THE CANADIAN HORTICULTURIST. As the circulation continues to increase it is our intention to enlarge and otherwise improve the paper, and thereby keep abreast of the development that is taking place in our fruit and horticultural interests.

An excellent article by Mr. T. G. Bunting, of Ottawa, on systems of orchard irrigation that we had intended to publish in this issue had to be held over owing to lack of space. It will, however, appear with a number of other equally interesting articles in our August issue. A special feature of this issue will be a special article dealing with the picking and packing of peaches and written by Mr. Logsdail, of the Jordan Harbor Experiment Station. For the floral department we have been promised an article by Mr. J. McPherson Ross, of Toronto, entitled "Planning for Future Flowers," as well as an article on "Paeonies and Their Care," by Mr. John Cavers, the well-known specialist, of Oakville. Another description of a Canadian garden, freely illustrated, will also be a feature. The August issue will be a strong number.

Great preparations are being made for the Second Annual Packing Number of THE CANADIAN HORTICULTURIST that will appear the first of September. A number of Canada's leading authorities have promised to contribute, and some have already forwarded their articles. We expect that this year's issue will surpass last year's fine number.

Items of Interest

Prof. W. S. Blair, of Macdonald College, Quebec, has been appointed superintendent of the fruit experiment station recently established at Kentville, N.S., by the Dominion Government. He has also been made Maritime Horticulturist. Prof. Blair is a native of Nova Scotia, and at one time held the position of horticulturist at the Experimental Farm at Nappan, N.S.

At a meeting of the fruit and vegetable growers of the Leamington district held during June the defunct Erie Fruit Company was revived. The object of the growers is cooperation in the matter of car-lot shipments. Shipments will be made to the prairie country. The following officers were elected: President, J. Atkins; secretary, Geo. Ross; business manager, E. E. Adams.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

Calgary's Good Work

In Calgary there is a horticultural society that is doing things. Its officers are men of resource, enterprise and public spirit. The city is being benefitted by their activities. Through the kindness of the president of the society, Mr. S. R. Houlton, THE CANADIAN HORTICULTURIST has received a copy of the prize list of the society for 1912. This year it will hold its fifth annual exhibition on August 14 and 15, when one thousand two hundred dollars will be offered in prizes for plants, flowers, fruits, vegetables and decorative designs. A portion of this money will be used also as prize money for lawns, trees and gardens. The society is making a strong feature this year of garden competitions, especially cottage gardens, and is being encouraged by the great interest that is being taken in this special line of work. Last year one hundred and seventeen entries were made in this competition. A grant of three hundred dollars was received from the government last year and one hundred dollars from the city council. Before long we hope to be able to describe a prize winning Calgary garden in THE CANADIAN HORTICULTURIST.

Windsor's Corner Gardens

From time to time we have published illustrations in THE CANADIAN HORTICULTURIST of the flower beds conducted on the corners of the streets in the city of Windsor by the Windsor Horticultural Society. Last year the society had one hundred and seventy-five flower beds on the corners of the streets. The society gets a grant of four hundred dollars from the city council, and the work of looking after the flower-beds is attended to by men whose services are paid for out of the park estimates of the city. The society buys the plants. When a flower bed is located on a corner it is understood that the people living there must be members of the Horticultural Society and that they will water the flower beds. Much of the credit for the success of this work belongs to Alderman H. J McKay, who is the secretary-treasurer of the society.

The Standard Apple Box for Canada

At the recent Dominion Fruit Conference in Ottawa a resolution was carried requesting the Dominion government to make the standard apple box now used for the export trade the standard box for domestic use also. This box is 10in. by 11in. by 20in. in size. Hitherto there has not been a standard box for use within the confines of the Dominion. The resolution mentioned was not carried until after there had been a lively discussion. Some of the delegates later expressed the view that the standard box decided upon may yet have to be altered.

Mr. W. H. Bunting, of St. Catharines, who, while conducting an investigation into the fruit conditions in Canada last fall and winter for the Dominion government, visited the west, including some of the western States, took advantage of his opportunities to look into the box question. "There are," he said, "a number of different sized boxes in use in the United States, of which two are as follows, 10½ by 11½ by 18¼, and 10 by 11 by 20⅝. The box we propose to standardize has not been found the most suitable for their purpose. It is possible that when we get more experience we may find their box the best suited for our needs. While it may be safe for us to standardize our export box for home use also, our doing so will prevent us from gaining experience in the use of boxes of other sizes."

R. H. Agur, Summerland: "I feel that we should not standardize our present box, as while it may be suited for our needs now it may not be suited to them a few years from now."

Robt. Thompson, St. Catharines: "We are coming into competition more each year on the western markets with the apples from the western states, and should be free to meet them on an equal basis by using boxes of the same size as theirs. To standardize our present box may place us under a handicap. For the present we should defer adopting the standard box."

Prof. W. S. Blair, McDonald College, Quebec: "We have been experimenting at the college in the use of different boxes. The students seem to pack the fruit more readily in the Oregon box."

A. W. Peart, Burlington: "About eighteen years ago we used a box that was equivalent to four boxes to the barrel, and liked it very much. When the size was changed to our present export box we felt aggrieved. Now, however, we have adjusted ourselves to its use and are well satisfied with it."

Mr. Gibb, an expert box packer from British Columbia, who, although not a delegate, was present, was asked for his opinion. He stated that both the Pacific Coast and Canadian boxes have certain advantages, but these advantages are not so great either way as to necessitate any change in the size of the Canadian box.

Harold Jones, Maitland, Ont.: "We should not overlook the fact that our Canadian box represents an imperial bushel."

W. A. Pitcairn, Kelowna, B.C.: "Because there is no standard box for home use we can now use any kind of box we want to. There should be a standard, as there is nothing to prevent a firm from using a box that is an inch shallower than our regular box. We should standardize our present export box."

R. M. Winslow, Victoria, B. C.: "One of the fundamental conditions in the west is that we shall be free to meet the competition of the United States fruit growers on equal terms. There are three cubic inches more space in the boxes they use than there is in ours, while our box has one-seventh more surface. Their box has less waste on the side and carries a little more fruit. This gives them a great talking point with the buyers. Three-quarters of the fruit bought in the west is brought in from the United tates. We are going to have to endeavor to replace their fruit with ours, and therefore should be free to compete with them on equal terms. In the States the drift is to the smaller box. This unrest is likely to crystallize within the next two years in the adoption of a standard box. I feel, therefore, that we should defer action for the present."

R. H. Agur: "Many fruit growers are packing apples and pears in the same car, and find the difference in the sizes of the boxes inconvenient. If we change the size of our present apple box the size of the pear box will probably have to be changed also, as well as the peach box. All this would lead to other changes. Everything considered, therefore, I am in favor of continuing our present sized box."

Robt. Thompson, St. Catharines: "Until the best and most convenient sized box is finally decided upon we had better defer establishing a standard sized box for the Canadian home trade."

W. F. Summers, Victoria, B.C.: "At

Canadian Nursery Co., Ltd.
10 Phillips Place, Montreal, P. Q.

Have an immense stock of all Flowering Herbaceous Plants, Pæonies, Roses, Shrubs and Trees.
Lists and Catalogues on application

A few vacancies for respectable representatives
Terms on application

Apple Boxes

WE make a good box at the right price. It is especially suited for the apple grower and shipper.

One of our large customers last year used thousands of our boxes for the export trade. Such trade demands a strong, durable box. Our boxes gave every satisfaction.

Our Boxes are Right.
The Price is Right.
Let Us Quote You.

Barchard & Company, Limited
135-151 Duke St. TORONTO

Convenient Shipping Device

The illustration shows the manner of shipping single layer fruit cases which was adopted for the peaches and choice dessert fruit sent to the Festival of Empire Exhibition in London last year. Three cases are fastened together by the use of the iron clips shown in the illustration. These clips are driven on with a minimum of labor and time and hold the cases together very firmly. The cost is three and a quarter cents a crate of three cases. The clips may be obtained from John N. Warminster, 207 St. James St., Montreal.—Illustration furnished by J. A. Ruddick, Cold Storage Commissioner.

the convention of the British Columbia Fruit Growers' Association the growers were unanimously in favor of adopting our Canadian export box as the standard box for the home trade also."

Robt. Thompson: "If we allow this matter to stand as it is they will still be able to use the Canadian box if they want to."

R. W. Shepherd, Como, Quebec: "Our present Canadian box answers all requirements. We will be retrograding if we do not adopt a standard box."

Maxwell Smith, Vancouver, B.C.: "Our present Canadian box was approved for use at the last Dominion Conference not only for export purposes but for the home trade as well. Pressure was brought to bear on the government, however, which led to the words "for export" being inserted in the Act establishing it as a standard box, although it was not intended by the conference that these words should be added. We have made a start at uniformity by adopting this box as a standard box for the export trade, and we should complete this work by adopting this box for use for the home trade as well as abroad."

On the question being put to the conference the resolution in favor of adopting the export box as a standard box for home use also was carried by a large majority.

Fruit Distributing Facilities*

W. H. Buntiag, St. Catharines, Ont.

The proper distribution throughout Canada of the increasing supplies of fruit will necessitate a close study of transportation facilities. In this respect there is room for great improvement. The officials of our larger railway companies are becoming more and more interested in the fruit trade; they realize that it is an important addition to the volume of traffic, but are not yet sufficiently impressed with the claims of the fruit-grower for better equipment, service and despatch. In many cases very unsuitable cars are supplied; unusual delays in transit are frequently experienced; serious losses occur which are very difficult to adjust; rates of carriage are in many cases excessive and absorb too much of the ultimate value of the product. Some relief

*Extract from a paper read at the recent Dominion Fruit Conference in Ottawa.

Douglas Gardens

Oakville, Ontario

We lead in

PEONIES

in Canada.

The following facts go to substantiate this claim, viz:—Our Fall Planting List,—to be issued 1st August, next,—will describe and offer 67 varieties. Of these varieties 63 are double and 4 are single. Of the double varieties, the American Peony Society classifies 33 as "Extra" or "Very Good"; 25 as "Good"; 4 as "Medium," and one not classified. The same Society has published a list of 50 varieties recommended for Cut Flower purposes, and a list of 60 for Landscape purposes. Of the former list we offer 29 varieties, and of the latter list 30 varieties.

We strongly recommend garden owners to procure some of these fine Peonies for planting in September.

The prices are quite reasonable.

Send name and address and receive a copy of our Planting List.

JOHN CAVERS

Announcement

The demand for **Pedigreed Nursery Stock** during the past season has been so heavy that we could not supply all our customers, and we have therefore very greatly extended our business.

Stock planted last fall has come through the severe winter in excellent condition and we feel warranted in again advising fall planting for most varieties of fruit.

We shall be glad to answer all enquiries and quote prices for October delivery.

AUBURN NURSERIES

QUEENSTON, ONT.

To Our Advertisers

Should we have overlooked notifying you by letter, regarding the change in our advertising rates, kindly note that after August 1st, 1912, our rate for advertising will be $1.25 an inch flat New or renewal contracts calling for a specified amount of space to be used within one year will be accepted up to Aug. 1st, at our present rate, $1.00 an inch

Special September Number

Special value is offered you in our **Exhibition and Fall Packing Number** for September. Those of you who saw our splendid issue of last September will not need to be urged to take advantage of this special number which promises to eclipse its predecessor in every way.

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Advertising Department

The Canadian Horticulturist, Peterborough Ontario

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has been obtained, but much remains to be done before this feature of the Canadian fruit industry is put on a satisfactory basis. The great north-west country will be able to consume, at a profit to the producer, all the fruit that can be grown for many years to come, provided it can be landed from the east and from the west in good condition and at reasonable cost.

This conference will render the very best service to the fruit industry at large, if ways and means can be devised to secure improvement of these conditions, both with regard to the freight and express service. I take the liberty of suggesting to this conference the advisability of selecting a joint committee of say three men, one from British Columbia, one from Ontario, and one representing the Maritime Provinces, whose duty would be to secure facts and information relative to market conditions, both as to supply and demand throughout the Dominion, and give publicity to such information. This committee would also be able to treat with railway companies and other organizations, having regard to the welfare, not only of any particular section or province, but of the fruit industry of Canada as a whole.

Ontario Apples in the West

Byron W. Webster, Winnipeg, Man.

There is land in British Columbia that is selling on the Winnipeg market very readily at one hundred dollars an acre. This land in most cases is just plain farming land. It includes some timbered land, but none that is any better than land in Ontario. The fruit grown is no better than Ontario fruit, and the railroad facilities no better if as good. Why is it that they can get tip-top prices for their land, while in Ontario land is almost given away in comparison.

Perhaps this will throw a little light on the subject. I went into a fruit store the other day on Main street, which calls itself the city apple market. Barrels of rotten apples were lying around the shop, and on stands were apples that in Ontario we would throw out to the pigs. At their best they were number three, but through time and exposure they were all partially rotted. And horrors of horrors, at the back of the shop, in big red letters covering the entire back, was printed "High-class Ontario Apples." Beneath that was a sorting table piled up with apples, mostly rotten, with a half bushel measure on one side and a barrel for the rotten ones at the bottom.

And that is the way Ontario apples are advertised. Contrasted with that the British Columbia and Washington fruits are packed in clean boxes, are sold in the best stores and placed in every way to show the public what fine fruit is grown out west. Their enterprise results in large profits for western fruit-growers and landholders. When one examines the fruit, it is no better than that grown in Ontario. I have never seen western apples shown in such a rotten way as I see the eastern apples.

It is just that which makes the western fruit sell at two dollars fifty cents a box, while that grown east sells at one dollar fifty cents, and makes British Columbia orchards sell at five hundred dollars and one thousand dollars an acre, while eastern orchards sell at from one hundred to three hundred dollars an acre. No wonder the people are going west, where up-to-date business methods are employed. Although Ontario fruit-growers are waking up, the progress is altogether too slow. There may be boxed Ontario apples on the Winnipeg

market, but I have been watching the high-class stores and I have yet to find them.

There is land in British Columbia with timber on it in an unirrigated country, where a large number of trees were frozen out two years ago, selling on the Winnipeg market at one hundred dollars an acre, and there seems to be no difficulty in selling it.

Cooperation Progressing*

Notwithstanding bad legislation and want of leaders in rural affairs and all the other obstacles that have to be met, co-operation is making great headway. It is true that not all the societies have been successful. Many have fallen by the way. Not a few of the fruit growers' associations that were counted among the most successful a few years ago have disappeared and their history is not without interest. But the greater number of the associations have continued to flourish, and they do so in spite of the conditions that surround them rather than because of them. Many of them would long since have disappeared had it not been for the public spirited men who have been entrusted with their management.

CO-OPERATION AND STORAGE

It would be invidious to mark out individual societies, and I content myself, therefore, with noting the lines of work that have been particularly successful. I note specially the success which has attended the building of packing houses, warehouses and cold storage equipments. A few years ago, the storage facilities for apples and fruit generally were very meagre, and the storages then existing were in the hands of private individuals and served largely as traps in which the private apple dealer could catch his game and grow rich upon the quarry. To-day there are some scores of warehouses owned by the orchardists themselves and not built for the purpose of earning dividends but for the purpose of improving the fruit industry. This I count among one of the great successes to be reported in connection with co-operation.

CO-OPERATION AND PRICES

It might not be out of place to record, as one of the advantages of co-operation, that prices have advanced materially. I do not mean to say that the general advance in the price of apples is solely and wholly due to the co-operative associations, but I do say—and note it as one of the triumphs of co-operation—that the members of co-operative associations are getting to-day at least seventy-five per cent. more for their apples than they were under individual management. This would be no subject for congratulation if it meant that they were getting this advance and did not earn it. The real subject for congratulation is that the apples furnished by the members of the co-operative associations are worth seventy-five per cent. more than they were under individual management, and that the co-operative organization renders it possible for them to get the increased price for the increased value which they have added to their product.

The members of the Norfolk Fruit Growers' Association in former years, when the Liverpool prices were even higher than they are to-day, sold their apples for one dollar and twenty-five cents to one dollar and sev-

*Extract from an address delivered at the Dominion Fruit Conference in Ottawa.

Take A Handful Of "St. Lawrence" Sugar Out To The Store Door

—out where the light can fall on it—and see the brilliant, diamond-like sparkle the pure white color, of every grain.

That's the way to test any sugar — that's the way we hope you will test

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enty-five cents, and many of them for even less than that. To-day these same members are getting an average of three dollars a barrel, and I repeat that the buyer is getting better value for his money.

ASSOCIATIONS AS DISTRIBUTING SOCIETIES

Another great success has been scored in using the associations as agents for buying supplies. In making a comparison between co-operation in Denmark, for instance, and Great Britain, we find that in Denmark co-operation is concerned largely with agricultural production and selling. In Great Britain agricultural production and selling have made progress only during the last few years, but co-operative distribution of the necessities of life has made most extraordinary progress. The co-operative wholesale society of Great Britain last year distributed over $600,000,000 of products, a sum so vast that it can scarcely be conceived.

There seems to be no reason why distributive co-operation should not make some headway in Canada. Many of the associations have already made some use of the organization for distributive purposes; indeed, the St. Catharines Cold Storage and Forwarding Company is a shining example of what can be done in this line. Their distributions have grown from a few hundred dollars the first year to ninety thousand dollars in 1911, and upon this it is safe to say there has been a saving of from ten thousand dollars to twenty thousand dollars a year. This phase of co-operative work might very well occupy our attention.

A Large Perennial Border

F. E. Buck, Central Experimental Farm, Ottawa

At Ottawa this year we have started a new perennial border twelve feet wide and some four hundred and fifty feet long. It will contain, in a few years, the best of everything that will grow in this climate. It is well to mention here, perhaps, that the work which is to be enlarged at the Experimental Farm along the lines of floriculture will deal to some extent with the solution of the problem of the barren parts of the west.

The Dominion horticulturist, Mr. W. T. Macoun, has been working for years to obtain shrubs, trees and plants which will stand the rigorous winters of the middle west. His work has been of untold value. Much work has been done, and much more will be done, in the way of testing varieties of flowering shrubs and flowers. When the results of this work are published it is hoped an added impetus will be given to the work of national betterment through the medium of the flowers.

Items of Interest

Eighty British farmers have recently arrived at Tilbury East township, in Kent, Ont. They will engage extensively in truck farming. Houses for their farms have been built in Toronto and are being shipped to Tilbury East in sections.

The Welland Cooperative Fruit-Growers' Association has been organized at Marshville, the members being principally fruit-growers of Wainfleet. They will handle their own fruit, purchase supplies and in other ways endeavor to make the fruit business a greater success. The following officers were elected: President, C. H. Wills; vice-president, R. R. Davis; secretary, W. E. Palmer.

Fruit Conditions in British Columbia*

W. H. Bunting, St. Catharines, Ont.

FRUIT conditions are varied in British Columbia and are very different to those which obtain in Ontario and the eastern provinces, complying more nearly with such as are to be found south of the line in Washington, Oregon and Idaho, states which have gained a wonderful reputation during the past few years for the production of enormous quantities of fancy, high-colored apples, as well as other fruits.

District number nine comprises what is known as the Lower Mainland and the Islands of the Coast, of which Vancouver Island is much the largest and most important. This area is characterized by a mild climate for the most part, with a very considerable humidity and great precipitation during certain seasons of the year, the total rainfall at Vancouver averaging about seventy inches annually. For this reason, and on account of the great fertility of the soil, small fruits do exceptionally well all through this territory. For the same reason the range of tree fruits is somewhat limited, and the varieties chosen for planting must be selected with care in order to be successful with them. Several varieties of apples, pears, plums and cherries do very well, more particularly the earlier kinds of apples, and those stone fruits not susceptible to brown rot. Some very fine orchards are to be found in this district, that of Mr. T. A. Bryden, near the city of Victoria, being a good example of what can be accomplished under proper care and management.

Strawberries, raspberries and other small fruits luxuriate in many parts of this district, and have been planted largely in different localities. The section on the main line of the Canadian Pacific Railway from Mission to the Coast, and the territory in the southern portion of Vancouver Island are the most largely developed and important. An excellent market is available, both locally and in the prairie towns and cities, and is not by any means adequately supplied. There is plenty of suitable land available for further planting. One of the chief hindrances to a rapid extension of the small fruit industry is the difficulty of securing sufficient help, especially during the picking season. This might be remedied to a large extent by adopting the methods in vogue in the states to the south, where cheap summer cottages are provided for families who are brought from the cities and taken care of on the farms during the busy season.

District number ten includes the various inland valleys of the province, and contains large areas of land where irrigation is necessary to secure profitable crops. There are also several important sections where the rain and snowfall are sufficient to furnish all the moisture required.

A remarkable movement has been undertaken during recent years in connection with the development of the semi-arid or dry areas. Encouraged by the success which has attended similar enterprises in the states to the south, and the results obtained from the orchards planted by the early settlers, where a supply of water was easily available, public attention was drawn to the establishment of irrigation projects in many parts of these valleys. Many thousands of acres have been brought under these systems and are being rapidly changed from comparatively barren areas of little or no value to magnificent orchards of fruit, and farms where large quantitiee of vegetables and other crops are being profitably produced.

PERMANENT SYSTEMS

Many of these irrigation systems are being constructed and extended in a most permanent and substantial manner by the more general use of concrete ditches and pipes, with steel flumes where necessary, instead of the ordinary open ditch and wooden flume which, while answering the purpose, allows considerable waste of water and requires frequent repair. It will not be possible to go into detail with regard to this feature of the development of British Columbia fruit-growing, and I can only mention as a type of these systems the one under the control of the Coldstream Estates Company at Vernon, known as the White Valley Irrigation and Power Company, which is perhaps the most extensive and important of the large number established in the Okanagan Valley, if not in the entire west. In this vicinity are also to be found the celebrated orchards of the Coldstream Estate Company, containing five hundred and forty-eight acres of fruit trees in various stages of growth, planted by the company as a commercial undertaking, with three hundred additional acres planted for clients. A number of the orchards on this property have been producing crops of fruit for some years, and very large profits have been derived from them.

There are many important centres

*Extract from a paper read at the recent Dominion Fruit Conference in Ottawa.

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References: The Canadian Ban of Commerce, (Market Branch) and Commercial Agencies.

throughout these valleys under systems of irrigation, chief of which might be mentioned Kamloops and Walhachin on the main line, Vernon, Kelowna, Summerland and Penticton in the Okanagan Lake district, and Grand Forks in the Kettle River Valley, in addition to numerous localities such as Salmon Arm, Armstrong, Nelson, The Needles, Nakusp and many others where irrigation is not essential. In all these valleys many hundreds of acres have already been planted to the tree fruits. There are still thousands more awaiting the coming of the settler to take advantage of the opportunities which are at present lying dormant in this western province.

Some criticism has been made at times in regard to the dessert qualities of British Columbia apples. I believe, however, that this province, in public competition, not only with the states to the south, but with the older fruit districts of the east, has demonstrated that it can produce fruit which cannot be excelled for size, color, freedom from blemishes and, in the case of many varieties, for dessert qualities.

UNSOLVED PROBLEMS

The country is new; many problems are unsolved, and in some cases the great opportunities of the west have been manipulated by the unscrupulous land-jobber, but all honor I say to the men who, with strong conviction and great courage, have undertaken the work of making the fruit industry the most important agricultural feature of this province of wonderful resources. They will be able to profit by the experience of the older provinces and avoid many of the mistakes made in the earlier days when horticultural knowledge was much more meagre than it is to-day. They have the success of the states to the south as an incentive to stir them up to good works, and there is every indication that in a very few years British Columbia apples will be favorably known in every fruit-consuming country on the globe.

Nova Scotia's Fruit Development

W. T. Macoun, Dominion Horticulturist, Ottawa

THE Cornwallis and Annapolis Valleys, where most of the fruit of Nova Scotia is grown, is practically one valley. It is about one hundred miles long and from six to eleven miles in width, and lies between two ranges of hills about six hundred feet in height. On the west side of the valley the North Mountain protects the orchards from the winds which blow across the Bay of Funday. Tidal rivers through and intersecting the valleys help to moderate the climate in winter and also moderate the heat in summer. The spring is comparatively late and the autumn usually rather cool. Most of the older orchards are planted on the lower and heavier soils, but some of the most profitable ones are on the sandy and gravelly slopes of the hills, and many orchards are being planted in such situations, as the land is usually cheaper than where the soil is heavier.

Apples, pears, plums, cherries and small fruits, and to a limited extent peaches and grapes, are grown in these valleys. The mining towns of Nova Scotia, of which there are a great many, use large quantities of the small fruits which are grown very successfully in most parts of the province.

A GREAT LOSS

Like the other Maritime Provinces, Nova Scotia has suffered by the constant emigration of her young men to western Canada and to the United States; and while the men who remained realized what a great future there was in the fruit-growing industry, they could not induce many of their sons to stay at home. There was also little, if any, cooperation among the growers, and it was left to a few enthusiastic men to do what little was done for the general welfare. Now, this is all changed, and cooperation is the watchword. During the past two seasons twenty-two cooperative associations have been formed, and while each of these associations has its local manager, a general manager for them all has been appointed this year.

EFFECT OF COOPERATION

The fruit growers of the Annapolis Valley, and in fact in all parts of Nova Scotia, are, most of them, intelligent men, and it but needed the cooperative movement to bring about the marked advance in methods of growing and handling the crop, which is seen to-day, although the progressive fruit growers of the Annapolis Valley have long been noted for the good culture they gave their trees. With the cooperative movement came the more general use of the power sprayer, many of which have been bought during the past two years.

A GREAT CROP

During 1911 there were few trees of bearing age that did not have fruit, and most of the trees were almost breaking with their load, the fruit being very free from blemishes, and higher colored and better matured than usual. Barrels ran short and fruit growers lent a helping hand to the coopers to keep up the supply. One factory near Port William, we are told, turned out fifteen hundred barrels a day for two months, another one twelve hundred, and so on. There are about ten of these factories in a radius of ten miles. About one hundred warehouses are scattered along the railway in the Annapolis Valley, in which the fruit is sorted, packed and stored until shipped. At some centres there are from four to five, and brick buildings are now being erected. The writer visited the Annapolis Valley during the first week of November, and found the fruit practically all safely housed. Two of the largest growers are said to have each harvested about eight thousand barrels of apples, while other yields of from four to five thousand barrels were reported. It was expected to send one hundred and fifty thousand barrels to the Canadian North-West, and many of these had been shipped, including sixty-three thousand barrels of Gravensteins.

Norfolk County

The wonderful transformation that has been worked in Norfolk county, Ontario, largely through the efforts of one man, Mr. James E. Johnson, of Simcoe, is shown by the fact that within the past five years nearly 260,000 fruit trees have been set out in that section, while the output from the old orchards has increased from ten thousand to nearly 40,000 barrels annually. As a result of the improved methods which have been adopted there are fewer instances of insect pests and fungous diseases than ever before, while the price paid for fruit has advanced materially.

The First Big Ben Cost $12.85

Big Ben is the result of 26 years of fine clock making. The first Big Ben cost $12.85 to make. The first hundred cost $6.50 each. But the great demand has brought the price down to everyone's pocketbook.

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Big Ben the national sleep-meter, is arousing thousands of farmers on time. Everywhere, everyday, the gentle, insistent voice of Big Ben taps the "sleepy heads" to joyous action. This "minute-man" starts the day with a smile. Big Ben never fails—he's on the job always. He rings 5 minutes straight, or at intervals of 30 seconds for 10 minutes. He tells the truth and gets you and the farm hands up "on the dot."

Big Ben is hand-built, like a fine, thin-model watch, and "time checked" for 140 hours for accuracy. 1,055 skilled watchmakers build Big Ben—the clock that's the pride of the famous Westclox Community of La Salle, Illinois.

2,500 Big Bens now leave the factory every 10 hours and the demand gets bigger daily. Big Ben has ticked himself into popular favor because he is built right, runs right and is priced right.

Big Ben is sold by 5,000 Canadian dealers. If you cannot find him at yours send us $3.00 today and we will send him by return express, duty charges prepaid.

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The Cold Storage of Apples*

J. A. Ruddick, Cold Storage Commissioner, Ottawa

ANY apple which is ripe enough to show signs of softening is past the stage for successful cold storage treatment. Any decay in the form of rots, especially the ordinary brown or soft rot, will be arrested very little, if arrested at all. Take the Northern Spy for instance. Well-developed specimens with sound skins, and put away in time, will keep with the best, but at the same time this variety is also very susceptible to rots if the skin is broken or injured in any way, and for this reason it frequently does not keep well in cold storage.

KEEPING QUALITIES

Apples which are well matured on the trees, but still firm, will keep better and longer than if picked at an earlier stage. Well-matured apples show less tendency to scald. This is very marked in the case of the Greening. In tests which the Department made in 1909-10 apples of this variety picked rather early at a certain date, scalded badly in cold storage, while others from the same tree picked three weeks later were almost free of this rather serious defect. If the Greening has reached the stage when it shows a faint blush there is not apt to be much scalding. A good color seems to be a great protection against scalding in all varieties. Late varieties of apples which are grown in localities where the season is longest and where they reach the greatest maturity on the trees, are the ones which will give the best results in cold storage. This is all the more important, when considered along with the well-known fact that under what may still be termed as normal conditions of handling the apples grown in these localities are not noted for good keeping qualities. The same thing applies in general to a season like 1911, when the crop matured early on account of the hot weather. There are very general complaints about the poor keeping of apples this winter, and yet the 1911 crop possessed the very qualities which would have given good results in cold storage, providing the storing had not been too long delayed after picking, as was the case with some that I have heard of.

I believe that the repacking of barrelled apples, which is now so generally practised in the frost-proof warehouses in Ontario and Nova Scotia, could be dispensed with if the apples were sent promptly to cold storage. In 1909 the Dairy and Cold Storage Branch made some trial shipments to test this matter. A car load of Spies and Baldwins were divided, one lot being put in a frost-proof warehouse and the other sent to cold storage at St. John, N. B. The first lot was repacked, but the cold storage lot was shipped without repacking. Both lots were sold together in Glasgow in the month of March. After paying the cold storage rates we found that the cold storage lot netted us from ten to seventy cents a barrel more than the others.

There were both number one and number two apples in these lots, and it is interesting to note that the number one apples gave the greatest gain in cold storage. Full particulars of these trial shipments will be found in bulletin number two of the Dairy and Cold Storage Series. It may be of interest to add that one box of Spies from the cold storage lot was held for eighteen months. The quality was well preserved and the apples stood up well after being removed to an ordinary room temperature. This box was held for the first six months at thirty-two degrees, and after that at thirty. The latter is the best temperature, but of course it is very near the danger line, and great care has to be taken at such an extreme low temperature to prevent some part of the storage room from reaching the freezing point of the apples.

There is considerable difference in the behavior of different varieties of apples in cold storage. This phase of the subject offers a field for further investigation and study.

STORAGE OF PEARS

With respect to other fruits, the pear probably is the one which is best adapted for successful handling in cold storage. Some varieties may be carried for several months in perfectly satisfactory condition. Many growers in the Hudson River Valley store a large part of their crops and market them in New York for the Christmas trade. The total quantity of pears carried in cold storage for several months every year in the United States is said to be nearly half a million bushels.

I am of the opinion that the season for special varieties of grapes might easily be extended very considerably with proper management. We have not had an opportunity to acquire much data in this connection, but in the fall of 1910 some twenty-five commercial baskets of "Wilder" and "Vergennes" were sent to the London cold storage and held at about thirty-four degrees. I had some of these grapes sent to Ottawa on March 8th and they were in very fair condition.

I hope sometime to be able to secure facilities that will enable me to study the matter of grape and other fruit storage more carefully, because I feel that we have much to learn as to the most suitable temperatures, style of packing, and other conditions of storage. It may not be out of place to say that opinion has changed with respect to the most suitable temperatures for carrying fruit, and it is now pretty well established that the lowest possible temperature without freezing will give the best results, and that a difference of one or two degrees will have a noticeable effect on the length of time that fruit will be preserved.

The actual freezing temperature of fruits will depend largely on the percentage of sugar in the juices. I do not think any apples will freeze at thirty, but how much lower some varieties might be safely carried I am unable to say. Australian experts say that pears will keep best at twenty-nine to thirty degrees, and that grapes grown in that country will stand even lower temperature because of a higher percentage of sugar. I think it is likely, however, that Australian grapes contain much more sugar than those grown in Canada do, because of the hotter climate in that country.

There is another side to the question of cold storage, and that is the commercial one, as to how far the cost of cold storage will be balanced by increased returns in the sale of the fruit. This will have to be determined very largely by practical experience. I do not believe for a moment that it is necessary or desirable to provide cold storage for the whole of the Canadian apple crop. I have indicated some of the special ways in which it may be of great service. I believe that it would pay to refrigerate a large proportion of the so-called frost-proof warehouses now in use in Ontario and in Nova Scotia. This could be done at com-

*Extract from a paper read at the Dominion Fruit Conference in Ottawa.

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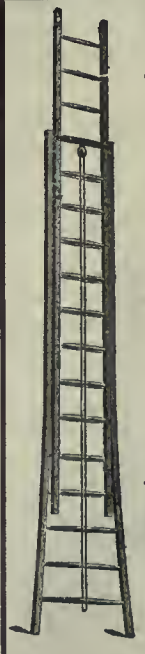

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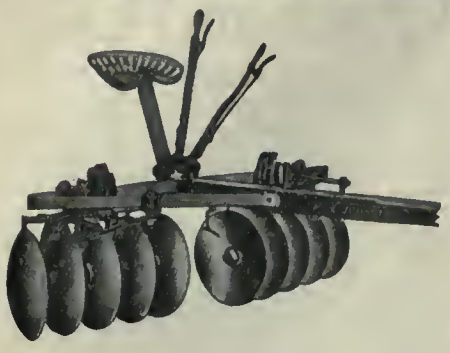

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THE MASSEY-HARRIS ORCHARD DISC HARROW is indispensable for orchard and vineyard work, it being especially designed for fruit culture, and is also useful for general discing about the small farm.

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The Massey-Harris is fitted with ten 16-inch Discs and effective Scrapers are provided for keeping the Discs clean.

Extra Discs with Spools can be furnished for converting the machines into a twelve disc size.

The Harrow with ten Discs cuts 5 feet and 6 inches, and when the Extension Frame is used the machine measures 10 feet and 1 inch in width.

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paratively little cost, as most of them are already fairly well insulated. Where there are two or more warehouses in a locality it would be quite practicable to operate them all from a central refrigerating plant with a pipe line system connecting with each warehouse. This plan could be carried out at places like Brighton and Colborne on Lake Ontario, and at many stations on the Dominion Atlantic Railway in Nova Scotia. It would be very economical both in the matter of equipment and operation.

It has always seemed to me since I have been able to give any attention to such matters that small cold storages using ice, or, better still, salt and ice as a refrigerant, would be of much service to individual growers, and especially in the tender fruit districts.

Recent Publications

A number of interesting and valuable publications have reached THE CANADIAN HORTICULTURIST during the past month. "Vegetable Gardening," by Ralph L. Watts, Prof. of Horticulture, in the Pennsylvania State College, is one of the most complete works dealing with this subject we have yet seen. It is written with a twofold purpose, first to meet the demand of instructors desiring a text-book on vegetable gardening, and, second, to present in an organized form data of value to all classes of vegetable growers. The work relates to the culture rather than the systematic study of vegetables, although some attention is given to a description and classification of the more important garden crops. The subjects dealt with include soil, tillage and tillage tools, manures and cover crops, commercial fertilizers, irrigation, insects and diseases, seeds and seed growing, hot beds and cold frames, transplanting, cultural directions and marketing. The book comprises over five hundred pages, is profusely illustrated and may be obtained from the Orange Judd Company through The Horticultural Publishing Co., Peterboro, Ont.

"Oxford Gardens," by R. T. Gunther, M.A., Fellow of Magdalen College, Oxford, is a beautifully bound, well-illustrated volume of almost three hundred pages. Its contents are based upon Daubeny's Popular Guide to the Physick Garden of Oxford, with notes on the gardens of the colleges and on the University Park This volume may be obtained from Simpkin, Marshall and Company, of London, England.

Bulletin No. 99, of the University of Missouri, Columbia, Missouri, deals with the inspection of commercial fertilizers. Bulletin 98, of the same college, is entitled "San Jose Scale in Missouri." It is illustrated and contains valuable information concerning the character and control of this pest.

The Department of Agriculture of the Province of Quebec has issued the report of the Experimental Fruit Stations of the province for 1911. The report is by Auguste Dupuis, Director of Fruit Stations, and includes reports from the substations throughout the province. The report shows that considerable good work is being done by the fruit stations in Quebec.

The Dominion Department of Agriculture has issued a bound volume containing Bulletins 21 to 30 of the Dairy and Cold Storage Commissioner's series, being volume two, 1907 to 1911. It contains the reports on the trial shipments of cold storage apples and peaches and the Inspection and Sale Act, revised edition.

The making of grape vinegar is discussed by Frederic T. Bioletti in Bulletin No. 237 of the Agricultural Experiment Station, Berkeley, California.

From the Agricultural Experiment Station at Ames, Iowa, has been received Bulletin No. 127, entitled "Spraying Practice for Orchard and Garden," by S. A. Beach.

The use of explosives in clearing land is dealt with at considerable length by J. F. Kadonsky, in Bulletin No. 216, of the University of Wisconsin, Madison, Wisconsin.

New control methods for pear thrips and peach tree borer are described by Earl L. Morris, in Bulletin No. 228, of the Agricultural Experiment Station at Berkeley, California.

The division of botany of the Central Experimental Farm, Ottawa, is distributing Bulletin No. 63, by H. T. Gussow, Dominion Botanist, entitled "A Serious Potato Disease Occurring in Newfoundland." The disease is the potato canker, which has caused enormous damage in Europe. Canadian growers are warned to be on the watch for its appearance in Canada.

The University Farm, St. Paul, Minn., has issued extension bulletins 22 and 23. The first is entitled "Establishing the Orchard," and is by K. A. Kirpatrick. The second deals with "Some Common Insects and Their Control." It is compiled from "Insect Life," by F. L. Washburn, State Entomologist, and Warren Williamson.

The German Potash Syndicate, of Toronto, is distributing a well-illustrated pamphlet by T. Walter Shipley, entitled "Fertilizing Fodder Crops." Among other useful information it gives tabulated results of fertilizer experiments with fodder crops, showing calculated profits.

The Thinning of Fruit

(*Concluded from page* 161)

ing. On slender twigs and on wood of the past season's growth (where many varieties bear heavily in British Columbia), it is well to thin to a greater distance than on strong fruit spurs in the body of the tree. On the outside twigs and shoots, the fruit will average smaller than on the stouter branches; they are unable to grow a close crop of fruit to perfection.

A very important point, especially with regard to the Yellow Newtown apple, is that the centre apple of the cluster and not one of the side apples, should remain. The centre blossom of the cluster comes out first; its stem is usually shorter and stockier than those of the outside blossoms, and at the time of thinning the apple is usually much larger than the others and on a shorter stem. The centre apple usually hangs better to the tree, is the typical apple of the variety, is less liable to variation in shape, and having a shorter stem is better for packing and for appearance's sake.

Fruit spurs vary greatly in size and vitality; the best spurs bear the best fruit; the weaker spurs should be given a chance to develop into strong ones before next year's crop.

In the production of fancy fruit, thining pays, and pays well. It means much in the assurance of crops of only higher-class fruit. It is not likely to be of value unless the orchard is right in the matters of variety, fertility, cultivation, pruning, and spraying; it is not likely to give good returns unless the high-class article produced is properly packed and marketed by business-like methods. Thinning is an essential feature of the new orchard culture.

I am much pleased with THE CANADIAN HORTICULTURIST and would not be without it for twice the cost.—P. E. Smith, Roxham, Que.

The Canadian Horticulturist

Vol. XXXV AUGUST, 1912 No. 8

The Irrigation of Small Fruits and Vegetables

T. G. Bunting, B.S.A., Experimental Farm, Ottawa

WHEN considering the advisability of installing a system for irrigation purposes, the four points to keep in mind are, climatic conditions, soil, the character of crop to be grown and markets. Having these points in mind and giving them the consideration that they deserve, it is possible to decide in favor of or against irrigation in any particular case.

It is the writer's experience, based on experience in the Pacific Coast States, particularly in California, as well as in New England, where irrigation is practisd by some of the largest vegetable and small fruit growers, that irrigation is feasible in Ontario and particularly in the Niagara District, where it should result in greatly increasing the returns on the high priced lands. Irrigation has already been tried in Ontario for vegetables and small fruits in a number of cases and has proved satisfactory.

Irrigation simply means applying a quantity of water to the land for the use of a growing crop. Almost every annual report of the different farmers' organizations of Ontario, as well as of the Ontario Department of Agriculture, makes frequent mention of periods of more or less prolonged drought each season which have seriously affected the yield of crops. The summer of 1911 is still fresh in the minds of many people when the prolonged drought cut the crop of berries in Ontario very short, affecting not only the consumer, who had to pay the high prices, but the grower who was not adequately compensated for his small crop, even by the high prices. The grower, also, was not able to fulfil one of the first principles of good business, the giving of satisfaction to his customers, inasmuch as he was forced to charge them abnormal prices.

In years of big production and low prices the man who irrigates will again win out, as his extra fine crop, the result of irrigation, will realize the top prices. As business men know, the man with extra fine produce can sell more easily in the years of big production than the man with poor or only medium produce. In a year like 1911 irrigation will often mean, in a crop like strawberries, the difference between success and failure, so that even with the most expensive system of irrigation the cost of installation would be paid for by one season's crop.

DIFFERENT SYSTEMS

There are two systems of irrigation that may be practised. The gravity method requires a large supply of water, which is applied to the soil through open ditches, the water flowing by gravity. As it flows it soaks into the ground. The second method is by overhead sprinkling. This requires the water to be delivered under a pressure of fifteen to thirty pounds to the square inch. The quantity depends on the area to be irrigated at one time. The former method is cheaper in initial cost but extravagant in water, and higher in up-keep. The latter method is economical of water, cheaper in up-keep, but more expensive in initial cost for installation. In the long run it is the best method to adopt for small fruits or vegetables.

To apply water by gravity the water must be brought to the highest part of the land to be irrigated. From this point it is delivered through furrows, about three to four feet apart and three to four inches deep, over the land, the furrows following the contour of the land so that there is an even, gentle fall. When a crop is growing the water is delivered between the rows. The land must be laid out and planted so that the water may be delivered by this method. With a little study and practise it can be done quite easily on most lands, provided the water can be brought fairly cheaply to the highest part of the land. In practice it is desirable to use lands for this purpose that can most easily be irrigated by this method.

In the overhead sprinkling system the water is carried through pipes to the land to be irrigated. Here the water is applied in much the same method as by a gentle rain. The water is distributed from the main pipes through laterals placed from fifty to seventy feet apart and up to five or six hundred feet long. Along this lateral, placed at intervals of four feet, is a special nozzle through which the water is forced and carried a distance of thirty to forty feet from the pipe.

A Peach Orchard, Two Years from Planting, on the Farm of D. M. Hamlink, Huron County, Ont.

The pipe at the end of the lateral is smaller than the pipe at the beginning on account of the ever diminishing quantity of water flowing through the pipe owing to the flow through the nozzles. This decrease in the size of the pipe towards the end allows the water to be kept up to the same pressure to the end. The water is evenly distributed from these laterals over the ground for the full distance that the spray will reach and on completion of the watering of one side the position of the nozzles is reversed so that the other side for a distance of thirty to forty feet may be watered. These lateral pipes are connected to the main by a special valve which allows of the pipe being turned in either direction to the right or to the left so that either side may be watered. By means of this valve the water may be thrown high or low depending on the direction and velocity of the wind, and how far it is desired to throw the water. This can easily be regulated after a few moments of trial.

A SIMPLE OPERATION

Applying the water is not difficult, but it requires some practice. The chief difficulty in the way of prospective irrigation is the source from which to obtain water and the best method of bringing it to the land. If the water is to be applied by gravity it must be brought from a point higher than the land that is to be irrigated. There should not be any very low places over which the water is to be carried as this adds to the expense of building ditches or wooden flumes. There may be a few cases where it is possible to get water under pressure direct from mains, but these cases would only be near cities or towns, and likely on very high priced land.

MAKING DITCHES

In carrying the water through open ditches, the ditches, in ordinary land, may be opened with a plow. Thus very little shovelling of earth will be required. The banks of ditches may also be built over low places by means of the plow. Some water will be lost through soaking away, and in very sandy or gravelly soils it may be difficult to carry water on account of this loss, but very few soils will be as open as this.

Probably the best method to adopt, especially in the Niagara District, would be to bring the water in sufficient quantity to the land through open ditches and then pump it into pipes to be distributed from overhead. Pumps are now made that will handle water containing considerable quantities of fine sediment, but of course it is desirable to have as much of the sediment as possible removed. This can be done by bringing the water to a standstill in a large basin, constructed after the principle of a silt-basin, so that the sediment will settle to the bottom. This water can then be handled by the pumps without causing trouble in the nozzle.

There are a number of places, such as the Welland Canal, which runs through a part of the Niagara District, where water could easily be obtained by gravity. If, however, a near source of water cannot be found from which the water may be obtained by gravity, it can be lifted to a height of fifty to one hundred feet without great expense and then carried through pipes direct to the land. Of course, it costs money to lift the water this height, but after the engine and pump has been installed the cost of power will be small.

POWER NEEDED

The power required to irrigate an acre of land by the overhead method is about three and a half to four horse-power. The power required per acre decreases with an increase in acreage so that twenty-five horse-power will supply enough water for about twenty acres. The Skinner Company, of Troy, Ohio, are the pioneers in this system of irrigation. They issue several very complete bulletins on the subject of irrigation, any one of which is well worth reading by one interested. The total cost of the equipment necessary to irrigate from three to five acres by this system is from two hundred to two hundred and fifty dollars an acre. Properly handled it would be a paying proposition for many growers. The method of irrigation to be adopted would have to be worked out by each person, and would depend on the kind of crop, the soil, the source of water, and the capital required.

TWO CROPS POSSIBLE

Irrigation would be particularly valuable for strawberries, raspberries, and vegetables, especially vegetables for the early market, or vegetables planted late in the season, such as late crops of cabbage or cauliflower, as the soil is usually dry at the time they are planted. Again, irrigation will enable the grower to get two crops of some things from his land in one season, whereas if irrigation was not practised he would obtain only one crop.

Irrigation prevents frost from injuring such crops as strawberries and early tomatoes, as on a frosty night irrigation will prevent injury even when the temperature is from three to seven degrees below freezing point. Growers can thus afford to push these crops without being at the mercy of frosts.

Irrigation, to be effective, requires a large volume of water, especially when applied by gravity, as this is a wasteful method of applying water and should be used only where there is an abundant supply. The Ontario Vegetable Growers' Association have already become interested in irrigation, and it will not be long before growers of small fruits will be adopting irrigation with a view to increasing their returns. It is a question rquiring careful study and thought and those first to adopt it will be the first to reap the benefits.

Co-operation by Fruit Growers

One of the most helpful bulletins dealing with cooperation by fruit growers yet issued is one distributed by the University of Missouri Agricultural Experiment Station. It is Bulletin Number ninety-seven. Besides explaining why cooperation is necessary and the causes which have led to the failure of many cooperative associaitons, the bulletin gives a history of various successful organizations and publishes copies of their by-laws and regulations.

The bulletin shows clearly the high standards called for by some of the leading fruit growers associations notably the Hood River Apple Growers' Union.

ADVICE TO GROWERS

Included in the advice given by the Hood River Union to its members is the following:

The union will notify you by mail when a variety is to be picked. Upon receipt of such notice, pick, wipe and sort the apples, and get everything ready for packers as follows: Packing house, boxes, paper, packing table, nailing machine, nails, and so forth. Notify the office or the field inspector when you are ready for packers. The field inspector will then call on you, and if in his judgment the job is ready for the packers, he will arrange to put the packers at work; if not he will advise you how to proceed.

If the weather is hot, pick during the cool part of the day. Do not allow pickers to pull off fruit spurs, nor bruise apples by dropping them into buckets or boxes. Apples should be placed in the baskets or boxes, and not dropped in, or poured in. The stems of the apples should not be broken off. Haul the apples from the orchard to the packing house daily; do not allow them to stand in the orchard or in the sun.

WIPING AND SORTING

Wipe the apples just enough to make them clean and get off the spray. Do not polish them. Sorting should be done when the apples are being wiped. In sorting keep the fancy grades in boxes to themselves, the choice grades by themselves and the culls separate. Put four-tier apples and larger together, and four and a half-tier and smaller together. Fancy Spitzenburgs should always be graded for color, seventy per cent., or more good red color. Keep the light Spitzerburgs separate from the red ones. Special advice will be given on other red varieties for color as sold.

Do not fill the boxes too full of loose apples for piling in your warehouse, or the apples will be bruised by the next box placed on top. If boxes should be too full, either take some out or place cleats between the boxes. No box should be placed on top of a box of apples so full as to cause pressure upon the apples in the under box.

Packing Peaches on the Farm of J. W. Smith &Sons, Winona, Ont.

After the covers are nailed on, always pile the boxes of apples on the sides, and load into wagons on the sides. Do not pile boxes of apples into wagons by standing them on the ends. This doubles the risk of bruising when hauling by increasing the weight on the apples in the under end, and settles the apples in the box, making an empty space in the top end, and the pack may be rejected for loose pack. Packers will not be held responsible for loose pack when the apples come to the warehouse loaded in this way. Always pile boxes of packed apples on the sides and load them into your wagons the same way.

Picking and Packing Peaches

A. J. Logsdail, B.S.A., Grimsby, Ont.

WITHIN a few weeks fruit growers will be busy with the peach crop. It might be well, therefore, to briefly summarize a few of the factors that go to make success in picking and packing this fruit.

The longer a peach is allowed to remain on the tree till fully ripe, the better will it be in quality, but it must be picked sufficiently firm to allow it to carry without injury to such distant markets as eastern Ontario and the middle western provinces.

In picking peaches it should not be necessary to press the fruit to determine whether it is sufficiently ripe to pick. The appearance of the different varieties varies considerably, and only experience can teach one to quickly determine with the eye the fruit that is ready to pick from that which is nearly but not quite fit. A large proportion of the help available in the fruit growing districts is inexperienced and necessarily slow, but it will pay any grower to carefully teach the pickers how to pick, and save himself continual worry throughout the season, by receiving at the packing shed a large percentage of "finger-bruised" and "nail-cut" fruit that would otherwise have been perfect.

A peach should be picked, not with the points of the fingers and thumb pressed into it, but with the palm of the hand and the full length of the fingers around the fruit, thereby distributing what pressure there may be necessary over the whole peach, without producing finger bruises or nailcuts.

The eleven quart basket is the most popular size of package, each basket holding about fifteen popunds of fruit. Three layers of fruit in a basket of this size constitute a fair sample of first-class fruit. "Extra fine" and "Fancy" peaches are often packed two layers deep in what are called "Nine Quart" and "Six Quart" baskets, the former holding about twelve pounds of fruit, and the latter about eight. The "Nine Quart" is the same length and breadth as the "eleven," but shallower.

HOW TO ARRANGE

Fruit should be packed firmly and arranged so that they are slightly (though very slightly) above the level of the basket; they should be firm, but never squeezed into place. A basket too tightly packed is as serious a fault as one too loosely, though the latter is the commonest fault to be found in the handling of this crop.

A number of the fruit growers in the vicinity of Niagara ship by boat to Toronto, and they have devised what is known as the Leno-basket. The "Eleven Quart" basket is used for this purpose, the fruit being heaped well above the level of the basket, and instead of the usual basket lid, a leno covering is used. This is sewn to the top rim of the basket. The advantages claimed for these packages are: that they ship in better condition because they cannot be piled one above the other, but have to be placed upon shelves; that they sell more readily, the fruit being more attractive when packed in this manner, and that they bring a higher price on the market. The disadvantages are just those factors that are claimed as advantages: they cannot be piled one above the other, therefore they can only be carried where room will permit the use of shelves; where space is at a premium, as is often the case in fruit and express cars, the leno basket is at a great disadvantage; the higher price secured is very largely offset by the added amount of freight; and the leno covering is not as quickly put on as the basket cover. The use of this pack, therefore, is directly controlled by facilities of transportation, and even then can conveniently be used only on a limited scale.

A packing shed is a most necessary adjunct to a good orchard, and should be placed as near as possible to it. Four posts and a roof will answer the purpose, which is that of affording shade and cool air to the fruit as it is brought in from the orchard to be graded and packed. A portable shed, with shutters for windows, by which means ample ventilation can be secured, and provided with sloping packing benches, is a great asset in handling the fruit quickly and thoroughly during the rush of peach packing. All baskets full of fruit should be carried to the shed immediately, and there placed in the shade.

SMALL BASKETS

Several growers prefer using the small six quart basket for picking the fruit in the orchard, as there is less chance of bruising the fruit; the small baskets are more convenient when picking, and the fruit is more easily handled when brought to the shed for packing. It is a mistake, and one that is made by many, to think that a basket of peaches can be picked and packed at the same time. One man in ten might be able to do it, but for the other nine it is most necessary to see that the baskets are rearranged and packed before the covers are fastened on, and the grade of fruit marked on them.

Never before has the fruit industry of Ontario and the country been in a healthier state than it is to-day. This condition of affairs is due to numerous causes, but one of which I will mention

here, namely that of the fruit canning industry.

Within the past few years this industry has grown enormously, and has opened for the fruit grower a good market for his fruit, and one to which he can send his inferior grades with the surety of receiving a fair price for such. The canners will accept the best, and pay accordingly for it, but they will also find a use for the poorer fruit, and due to the growth of this industry, must be attributed in a large degree the marked improvement in the general quality of home grown fruit to be found on any of our city fruit markets.

Brief mention might be made of the recent efforts of the Provincial Fruit Branch and the Dominion Fruit Division to ascertain the feasibility of shipping peaches to the English markets. South Africa having developed this trade to a certain extent, an effort was made along the lines found most suitable by our brother colonists, and the results of these efforts suggest a good opening for some of our best and most enterprising growers. The fruit was picked when well colored but quite firm (almost hard), only the very finest fruits were selected, and that with the greatest care. They were then each wrapped in thin soft paper and surrounded with a liberal allowance of wood wool and packed one layer deep in boxes containing twenty to twenty-four fruits in each. They were shipped in iced cars and Atlantic refrigerator storage, and arrived in good condition on the London Covent Garden market. The prices secured for them indicate that there is an excellent opening for someone alive to this opportunity, though there are several important points that it would be well to be thoroughly acquainted with before venturing on such long distance shipments; such as the methods of business on Covent Garden market (the largest fruit market in the world), the best route to ship by, the agents to employ as salesmen, and many other minor factors, such as cartage, wharfage, porterage—relics of conservative business methods,which though cumbersome to the uninitiated, may be depended upon as being thoroughly sound.

In conclusion, a few figures might be of assistance, if not to the growers, perhaps to those who wish to buy. For general reckoning the following numbers of the different sizes of baskets can be shipped per one hundred pounds express tariff: Six eleven quart, seven nine quart, and twelve six quart.

There are several excellent cooperative marketing organizations in the tender fruit districts, which have greatly facilitated the disposal of the fruit, and at the same time improved the quality of the pack; and to-day with the combined influence of cooperative organization, the canning industry and fruit inspection, there is no excuse, if indeed there ever was, for dishonestly packed fruit. Samples of such packing should be diligently tracked to their source, and the offender punished in no light manner.

Orchard Management

Gordon McKeen, Hants Co., N.S.

A number of years ago it was thought that the size of the orchard should correspond with the number of live stock kept to maintain the soil fertility. Now many a large orchard is seen where the owner may keep only one cow.

In keeping the orchard up to its highest capacity the two most essential factors are cultivation and fertilization. Combine the two and the orchard will meet your bills. Among the different modern methods of maintaining the fertility the leading one is to first, in the spring, thoroughly prepare the land by ploughing and manuring, then once a week give it a good harrowing until the middle of June, then sow with vetches whose roots are rich in nitrogen. These vetches make a good mat and keep the tree rootlets safe should the ground be bare and the winter severe.

A Handy Tool in the Orchard

Grape hoe at work in the orchard of J. W. Smith, Winona. Note the way it can be worked in close to and around the trees, thus practically eliminating hand labor.
—Photo by a rep. of The Canadian Horticulturist

I do not advise the ploughing of the orchard late in the autumn, as it exposes quantities of the feeding roots to the action of the frost. It is better to wait until a suitable time in the spring. When that time arrives repeat the methods already mentioned with the exception of the manure, as the vetches will take its place.

One thing in the management of an orchard that many of us have not the nerve to try is thinning the overburdened trees after the fruit reaches quarter size. In this one must use judgment, as some varieties that do not overbear can easily bring their fruit to maturity with a high percentage of number ones. In many other cases this is a necessary operation.

Pear Scab and Its Treatment

Dr, J. B. Dandeno, Bowmanville, Ont.

Pear Scab is a very serious disease of the pear tree. It ranks, perhaps, second in importance to that of the twig or fire blight. When pear scab gains a good start it is exceedingly difficult, if not impossible, to clear it out of the orchard because of certain characteristics which this disease possesses. Apple scab is a relative of the pear scab, having a similar relation to it as beets have to mangels. Both are fungus parasites. They differ, however, in one important particular, and a knowledge of this peculiarity is essential to a successful warfare against the pear scab. This disease attacks the fruit, leaves, and branches, while the apple scab attacks only the fruit and the leaves. The apple scab does not attack the pear tree, nor does the pear scab attack the apple tree, as many people suppose. Apple scab yields readily to ordinary fungicides, mainly because it grows upon the surfaces and, therefore, can be reached with the spray liquid. Pear scab works on the twigs and small branches, burrowing under the bark and wintering over while in this condition. Because of this habit the fungicide can not readily be applied directly to the fungus. Moreover, serious damage is done to the twigs and branches, many of them becoming so "cankered" by the scab that death is the result. Pear scab is common in this locality, and much of the roughened appearance of the older branches is due to it.

For trees which are not seriously affected, the disease can be kept well in check by spraying with lime-sulphur and bordeaux just as for apple scab, with the addition of one application after the leaves drop in the fall. This should consist of strong lime-sulphur, or of a copper sulphate solution (not bordeaux) of suitable strength. In addition to this it would be wise to examine the trees to see if the branches have become affected. If they have, such branches should be pruned out and burned.

For trees whose branches are now more or less seriously affected, the pruning saw is the chief instrument. Prune out the worst, even to one-third of the total top, a similar portion next fall, and the remainder of the old top the following year. By this method sixty or seventy per cent. of the orchard may be saved. During this time the orchard should also be treated with fungicides as indicated in the preceding paragraph.

Pear scab gains an entrance to the branches during their first year's growth when they are green and delicate. After the corky bark is formed, entry is made only through wounds.

Canadian Gardens--A St. Thomas Beauty Spot

A. J. Elliott, Aylmer, Ont.

ARTICLE No. 8

ONE of the cosiest and loveliest nooks of the many in the Railroad City of St. Thomas, and as far south-west as possible from its converging interests, stands the beautiful home of Mr. Kenneth W. McKay, the genial county clerk of Elgin, and proprietor of the Municipal World. He is a florist by nature and is ever ready to talk flowers to any one who is at all interested in raising them. Neither is it all talk with him for he loves to help out when desired with his advice and his plants, to say nothing of the many bouquets that during the season find their way into the houses of his friends. In the competitions of the St. Thomas Horticultural Society he is a constant winner, and as he buys the best seed or plants he can get and gives them unlimited care and attention this is not to be wondered at.

The Verandah and Part of the Front Lawn of Mr. McKay's Residence.

A fine lawn fronts the house on the two roads indicated, and is as fine a piece of sward as will be seen anywhere. The house fronts on Prince Albert Place, and the garden is at the east end of the lawn, hedged in by spruce, with the entrance nearest the house hidden by a broad border ablaze with poppies at the time of our visit.

Passing behind this screen we find a gate and enter the garden. A lover of flowers will involuntarily express a sigh of satisfaction and expectation at the first cursory glance. It is difficult to say exactly why. Probably its unique character is the cause, for never have I seen such a one in this country in all the years of my sojourn here, and yet I have seen many. It savors of the Old Country, and I believe that stored away in his cranium the thought was established there by his Highland forbears. There are paths both ways that cut it into beds, each of which is kept where it belongs by a square frame of two by four cypress scantling painted green, which helps to give it a trim appearance.

As you follow path into cross path you find your expectation fulfilled, for there is everything there from the modest little vinca to the aggressive Alleghany hollyhock, mallow marvels, cosmos, and many others, in fact everything that will make a cut flower. It is here that Mr. McKay draws a line. He will not grow anything that does not come up to this standard. It must be a good bloom to cut. Since his tulips got through, Mr. McKay has taken special pains with his poppies, and his showing of Oriental poppies was simply blazing, and yet he likes to grow the Iceland poppy and others.

As you open the garden gate, you are struck by the sight of a bed of beautiful pansy blossoms, of many shades and markings that immediately attract attention. Gaillardia is a favorite that was just blooming. It was kept in bounds with hoops, skilfully held in place by painted laths. Digitalis, pæonies, aquilegia, were also in bloom, making the place a joy to an amateur florist.

NOT FLOWERS ONLY

Mr. McKay does not confine himself to flowers alone. His garden is a mixed one, and although a large bed of gladioli may be giving assurance of something good coming, the next square may be asparagus, onions, or any vegetable you may mention. His forte at the moment of my visit was lettuce, and how he transforms the ordinary leafy lettuce into solid heads formed quite an

A Section of Mr. McKay's Well Planned and Neatly Kept Garden.

interesting lecture the last time we were together.

Manure is Mr. McKay's slogan, all that can be used, and then some more. There is a tool house in the centre of the garden and behind it a long box holding several loads of manure. Into this is put all refuse from the house and garden, leaves, grass cuttings, and similar material, and thus each spring Mr. McKay has a compost that he says, and there is evidence to back it up, is just what the garden requires.

ROSE GARDEN

One hundred rose trees have been purchased for a special rose garden. This will necessitate more land, but I am sure that he will make a success of it.

The illustration here shown is taken from the back window of the house, and gives a bird's eye view of this lovely garden.

The Transformation of a City.—No. 1.

Success with Sweet Peas

Mrs. Nicholson, St. Catherines, Ont.

Having met with some success in the growing of sweet peas, I would like to tell you how it was obtained. In the first place we secured all the new kinds (that is Spencer's) that we could obtain both in the United States and England. Some thirty varieties in all were procured, no two alike. As they were all expensive, and as there were only ten or fifteen seeds of some kinds, we did not like to lose them. We therefore bought a book on sweet peas.

This is one of the things it taught us: to bury the packets in the ground, and cover them an inch deep for eight or ten days. This we did, after which they were ready to be planted. We did not dig a trench this time. As the ground was heavily manured, we took out about three inches of earth, and as the seeds were nearly all sprouted, we planted them just where we wanted them to stand. With those that were not sprouted we took a knife and gently cut them. In all I do not think that we lost a dozen seeds. Each kind was kept separate and all were labelled. When they were coming through the ground we took ashes from the rubbish pile and sprinkled it well on each side of the plants, so that the grubs would not disturb them.

When the plants were up an an inch or more we began to hill them up. As soon as they began to throw out feelers we began to string them. Every day or two we tied another string. Where there were only one or two we never let a bud flower. We had any number that had four flowers to a stem. We have cut a bouquet eight or ten inches across and every one with four flowers on, and such beautiful varieties.

A couple of days before our fall show we bought cotton sheeting two yards wide that covered the rows. To stand and look under the covering was a sight too beautiful for description. You will never know what some varieties are like until you shade them from the sun, especially in the oranges, reds and pinks. They are simply gorgeous.

If you are wanting to exhibit them, covering them with cotton will protect them from the wind and rain. One Sunday we had the worst wind and rain storm of the season. Had we had cheese cloth instead of cotton we would not have won any prizes the following Tuesday, when the show was held. Don't forget that sweet peas like soap suds.

Garden Notes

Don't forget to save some seeds to give to your friends.

Don't forget to enjoy the company of your flowers. The mornings and evenings are the best hours in the garden.

Many insects can be killed on golden glow, sweet peas, rose, buckthorn, plums, or any plant, by applications of soap solution. This is perfectly safe to use, and leaves no bad odor, and a few applications apparently are sufficient to rid a plant of its unpleasant parasite.

Window boxes will be improved by an application of liquid manure. See that all dead flowers are picked off. Freesias, Bermuda lilies, Hyacinths, and paper white Narcissi should be planted this month if desired to have them blooming indoors for Christmas.

If you grow gladioli you will find "Mr. Grub" is very fond of them. I often remove the earth where a gladiolus bulb was planted only to find a large grub lying just where the growth had started. These pests can be overcome by keeping a careful watch for them and digging around the plants in the early morning.—D. W. Marden, Pilot Mound, Man.

It is best to stand foliage plants out of doors during the hot summer months in partial shade. Under the shade of trees, if not too dense, or on the north side of a fence or building is the best place for them in summer time. A layer of coal ashes or a sprinkle of air-slaked lime should be placed for the pots to stand on to keep earth worms out of the pots.

Planning for Future Flowers

J. McPherson Ross, Toronto, Ont.

STANDING in the nursery at the end of a walk, on both sides are a group of the plant commonly called Scotch thistle, botanically Onopordon acanthifolia. They are fully six feet high and in full bloom and certainly are showy plants. With silvery gray, prickly leaves, they make good sentinels and guard the path well, for who enters there must be mindful how they pass these Scotch gentlemen, or they will get a prick for their carelessness. These plants are self-sown, a true biennial, and are worthy of a place in any garden for the effect they create.

This leads us to remember how many of the very showiest of our garden flowers may be now sown to grow plants for next summer. It is well said that a gardener's work is always six months ahead of him, rather let us say twelve months in many cases and sometimes years where the best results are aimed at, but the wise flower enthusiast is now getting ready to sow his or her garden favorites.

THE RIGHT TIME

The proper time to raise plants from seeds of both perennials and biennials is as soon as the seeds of this season's flowers ripen. With an almost avaricious pleasure the keen gardener waters the ripening pods of some choice flowers in order that he may be ready to gather and dry them on paper in some safe place to sow at the first opportunity.

Some of the showiest flowers we have are thus easily grown and with so little trouble in the doing that it amounts to a pleasure to the doer. The most prominent varieties which occur to our mind are delphiniums, foxglove, canterbury bells, columbine, gaillardia, lychnis, gyphsophila, (baby's breath),; arabis, (rockeress); achillea, Oriental poppy, phlox and hollyhocks. There are many more desirable kinds of the larger flowers, but the foregoing just makes a dozen, let us say, indispensable garden favorites.

SELECT YOUR SOIL

The best soil to sow these in is a sandy loam well enriched, and so situated that it will have, if possible, partial shade at the hottest time of the day. Poppy, foxglove and Canterbury bell seeds are exceedingly fine, and should be covered with but a dusting of fine soil, which should be firmed with the foot or back of the spade. Hollyhock and larkspur seeds, being coarser, can have more covering. The delphiniums grow slowly but the hollyhocks soon come up.

After all the seeds have been properly sown and a neat label with the name and date of sowing has been stuck in the row, water the rows carefully with a fine rose on your watering pot. The only thing to mind, and it is the main point till the plants appear, is not to allow the surface soil to dry out at any time. Do not keep the bed too wet but just damp.

When your plants are large enough to transplant, have a nice clean bed in which to prick them off in rows at least twenty inches apart and a foot in the rows for plants like foxglove and hollyhocks. Keep the soil loose by frequent hoeings and you will have by fall plenty of plants for next summer's flowering.

A bed, or more properly speaking, a border of flowers I passed frequently this past month, gave me great delight. It consisted, as nearly as I could make out in the limited time the fast speeding trolley allowed me, of purple, white and yellow iris, foxglove, campanulas and one continuous row of valerian. The plants were grouped in masses, but the valerian was a continuous row, and looked fine.

We have just done cutting paeonia blooms, and really the beauty, the size, the color and the perfume of most of the varieties added to the hardiness of the plant, its easiness of growth in all kinds of soils, its beauty of foliage, and its freedom from insects, entitle the paeony to be designated the "King of Flowers," if the rose is the queen. Again, you can transplant a pæony root any time excepting in winter.

August and September are the months to plant pæonies. If you have old plants and wish to renew and divide them, this is the time of the year to do it. This advice applies also to that other garden favorite, the phlox, in variety. From this on they are the glory of the garden. The phlox particularly needs dividing every three or four years, or else it runs out.

To have the best results from the pæonia and the phlox, the soil should be trenched—a gardening term for digging the soil two feet deep, with liberal manuring—and be sure it is well drained. In fact, all our herbaceous plants may be thus divided and replanted in August and September, particualrly the Oriental

The Transfiguration of a City—No. 2

This city garden has transformed an ugly bare spot, with the results here shown. Waste spots in cities should be taxed and forced into use.

poppy. This, also, is the only time to plant the lilies in sorts, particularly Lilium Candium, or the Madonna, or Annunciation lily, as it is termed. The loveliest effects may be had by planting clumps of delphinium interspersed with groups of Lilium Candidum, or campanulas.

For fall flowering, dahlias and gladiolus hold sway and it's while we are now contemplating the blooms which grace the borders that we can plan new and more pleasing surprises for next season. It is also now that we can arrange for our spring flowers by sowing pansies, forget-me-not, daisy, and others, for spring blooming. The directions for sowing before mentioned answer for these as well.

Another old favorite, hardy and early blooming plant, is the bleeding heart. This always makes a conspicuous show in the spring when early flowers are so appreciated. Old clumps of this flower, along with phloxes and pæonies, may be divided and replanted during the coming month. It also delights in a dry loamy soil well enriched. Nor should we forget in our future planning to provide good edging effects by having plenty of the various funkias. The wide shapely foliage and compact habit of this plant makes it an ideal plant for bordering.

Sedum spectabilis makes a beautiful edging, and we must not forget our old friend Phalaris arundinacea picta, or ribbon grass. When this plant gets too high, cutting it back to three or four inches promptly renews its lively appearance, and here I must mention the beauty and showiness of the pyrethrum. I don't know any plant more satisfactory than this for the weeks it is in flower. It is so piquant and showy, its long stems bearing the neat and attractive flowers and foliage. No well ordered garden is complete without an assortment of the lively pyrethrums.

Novel Effect with Sweet Peas

Mr. R. B. Whyte, of Ottawa, uses a striking method of growing sweet peas. At intervals throughout his garden Mr. Whyte has planted sweet peas which are trained to grow up wire nettings. The netting is so cut that separate pieces can be looped into circles about two feet in diameter. The netting is fastened to stakes set in the ground to prevent its blowing over.

Each piece of netting is the height of a person's head. As the vines grow up all around and cover it the different clumps of sweet peas thus trained make a striking effect in the garden. Mr. Whyte uses the Peerless Perfect Poultry Fence, which he has found gives better results than some other varieties of fences which have sharper points that catch and cut the vines.

The Paeony

John Cavers, Oakville, Ont.

THE herbaceous pæony increases in the public interest and favor the more the finer varieties become known. Its intrinsic merits form a substantial basis for this growing interest. Its hardiness and tenacity of life are unusual in plants. It is safe to class it with the "iron-clads." It does not winter-kill. There is, perhaps, no plant so well adapted to brighten the homes of the Canadian north west as the pæony because of this quality of hardiness. This quality is inherited. The modern varieties are descended from Pæony albiflora, a native of Siberia.

Another feature of the pæony that commends it to general favor is the freshness of its foliage. The foliage is interesting from its earliest growth in spring until it is matured by hard frosts in the fall. When the foliage and stems of a clump come to full growth as they do in the end of May, the size, freshness and healthy appearance of the former with the length and stoutness of the latter, give to the plant an appearance of healthy, vigorous strength seldom found in plants.

The blooms of the pæony are of many forms—from the single, through the various stages of becoming double, to the full rose form. Some are unusually fine in the bud stage, such as Achilles, Mme. Crousse, Modeste Guerin, Duchesse de Nemours, (Calot) and Umbellata rosea; and Achille and Duchesse de Nemours (Calot) are exceptionally beautiful in the half-open stage.

The colors are of many shades and tints from white to almost black. The lighter colors, however, prevail; and the lighter pinks in hydrangea and apple-blossom tints distinguish most of the fine later introductions. Fine reds are scarce, but Felix Crousse and Constant Devred are good ones of this color, the latter being a late variety. Mme. Bucquet and Mons. Martin Calinzac are the two of darkest color, the latter being the darkest grown. Mons. Jules Elie is the grandest pink and is by some considered the perfect pæony.

The pæony is free from the attacks of insect enemies and comparatively free from fungous diseases. Perhaps the only cautions that need be urged in this regard are to avoid planting in a wet, undrained location, and to avoid bringing coarse, unrotted manure into close proximity to the tubers.

The following notes may be found helpful:

A good garden loam well enriched, is the best soil for pæonies.

In full sunshine is the best location.

Plant in the latter half of September.

Preserve the name-labels.

Plant so that the crown is two to three inches below the surface.

Give to each plant a space of nine to ten square feet.

Mulch the ground after it has become hard frozen.

If for a border, plant in clumps of three to five of one sort.

If for a bed, plant ten to twenty-five of one sort.

A single row of pæonies, in which various sorts may be used, planted two feet apart, makes an excellent dividing line in a garden.

If a large clump effect be wanted quickly plant three one-year plants fifteen inches apart in the form of a triangle rather than a four to five year-old-plant.

If possible, leave the plants undisturbed for eight to ten years.

An annual dressing of fertilizer, preferably rotted cow manure, worked into the soil directly after blooming time, or very early in the spring, will give good results.

A liberal supply of moisture, natural or artificial, from the time the flower-buds are formed until the blooms are cut, or fully opened, will increase the size of the blooms.

Many varieties form flower-buds in clusters of three to four. Remove all these except the terminal, the largest one.

Plant for a succession of bloom. Umbellata rosea is the earliest of the Albiflora species to bloom. Couroune d'or (white), Marie Lemoine (white), and Rubra superba (Richardson), (crimson), are good late sorts.

Gladioli and narcissi may be planted amongst pæonies. These will prolong the blooming season of the pæony bed. The gladioli must be planted every spring; the narcissi must be planted in the early fall, and they may remain undisturbed for two to three years.

If the blooms are wanted for house decoration cut them when the buds begin to break open and place the stems in water. In cutting blooms leave two or three leaves on the stem of the plant.

The virtues of the pæony are summed up by a writer in Vick's Magazine, as follows:

"No flowering plants capable of enduring our northern winters are more satisfactory than the pæonies. Massive, without being coarse, fragrant without being pungent, grand without being gaudy, various in form and color, beyond the possibility of being successfully superseded, they stand in the first rank of hardy flowers."

Many house plants suffer from a neglect to water regularly. Some varieties that are kept in sunny windows require water every day.

The Gladiolus, My Favorite Flower*

E. E. C. Kilmer, Brantford, Ont.

MY favorite flower is the gladiolus. I have made it a favorite for several reasons: First, it is easily grown; second, I get an infinite variety of color, form and texture in the blooms; third, as the bulbs reproduce and sometimes multiply the outlay never exceeds the initial cost, which is not very great; fourth, a wealth of bloom is easily secured for practically the entire season; fifth, the blooms retain their freshness and vigor for a long time after being cut; sixth, the blooms are specially suited for vases and for house decoration; seventh, the plants are extremely free from pests, and very certain of blooming.

In growing the gladiolus, I make my preparations in the autumn. I have the ground absolutely free of weeds and spaded to a depth of four to six inches, after which I cover it with a good layer of rich manure, and leave till spring. In the spring I spade the manure in to a depth of twelve to fourteen inches, and rake the ground down smooth. About May tenth to the twentieth, according to the season, I put out my first bulbs in rows from fifteen to eighteen inches apart, according to the number of bulbs I have to plant and the space at my disposal. I place the bulbs six inches into the soil at distances of ten inches in the rows. As soon as the leaves make their appearance I work the ground over with a Dutch hoe almost daily, thus keeping free from weeds and inducing plenty of moisture to rise from below. I seldom use the hose on the plants as I think it destroys the blooms, but when I find it necessary to use water I put it on in the evening and endeavor to let as little as possible on the blooms. At intervals of two weeks I put out more bulbs until I have four lots under cultivation.

I cut my blooms when the lowest one is partly open and place them in the cellar for about thirty hours before using for bouquets.

When the autumn frosts have become sufficiently hard to brown the leaves, I lift the bulbs and leave them on the ground for a day or two, after which I cut off the leaves near the bulb, break off the old bulbs, and place in shallow trays in the shed for a week or two. I then go over the bulbs, removing the dried bases of the leaves and any loose coverings, after which they are placed in fruit baskets, carefully labelled, and left in a dry place, free from frost, until required the following spring.

The soil in which I grow my bulbs is a good sandy loam. It is protected from winds on the west by a hedge, and on the north by the house and a hedge. I use only Canadian grown stock of a medium price, except a few upon which I experiment and have never yet failed to secure an abundance of good bloom.

*The fourth prize essay in the competition conducted last year for prizes offered by Mr. Hermann Simmers, of Toronto, and Mr. R. B. Whyte, of Ottawa.

Floral Suggestions

Wm. Hunt, O.A.C., Guelph, Ont.

Shrubby begonias should be repotted into good rich, light potting soil about the end of August and brought into the window at once . Begonias do not like a too sunny position at any time.

To have calla or arum lily in flower early in the winter they should be repotted about the end of July. Repot them in July and bring them into the window about the end of August. Give them good drainage when repotting, and good rich soil. Water them well when once well started and sponge and spray the leaves with clear water frequently. Liquid fertilizer will help them during the winter.

Dig the chrysanthemum plants up, if planted, about the end of August. Bring them into the house before frost, usually about the end of September. These plants like plenty of water at the roots, sprinkling frequently, and a cool window away from fire in the fall when flowering. After flowering, cut the flower stem down, and stand them in a cool window or put them in the cellar until spring. The soil should only be kept barely moist during the winter. The pompon type are especially good for window plants.

Impatiens, or Bloom For Ever, should be dug and potted in light potting soil about end of August and brought into the window at once. These like a bright sunny window in winter. Spray the foliage frequently to keep down red spider and other insect pests.

Pelargonium plants in pots, when through flowering in June or July, should be stood outside in not too sunny a spot. Dense shade should be avoided. In August when the old wood is ripened, cut the plants well back, allow them to start into growth a little, and then shake the roots out of the soil. Cut the roots back about one half and pot the plants in small pots in rather sandy soil. Place them in a cool window near the glass early in September before frost. In five or six weeks repot them into a two or three size larger pot into good soil with plenty of drainage at the roots. Give them a cool sunny window away from fire heat during the winter. Sprinkle or spray the foliage almost every day while growing until they are out of flower to keep down the green aphis or lice that often infest these plants badly, especially in a hot window and a dry atmosphere.

Gold Medal Collection of Gladioli, exhibited at the Canadian National Exhibition Toronto, last fall by A. Gilchrist, Toronto Junction, Ont.

Summer Sprays for Vegetables

Prof. E. M. Straight, Macdonald College, Que.

THE air is pregnant with insect life! The "hum" and the "whir" are fruitful topics from the standpoint of the rural poet; but the market gardener whose vegetables are attacked by caterpillars on the leaves, grubs in the roots, larvæ in the stems, besides multitudes of fungoid diseases above and below ground, fails to see the poetry. One thing he is obliged to see, viz., His crops. They, unless protected, will gradually go back to the soil; and the realization will be forced upon him that his labor has been for nought. The growers are accepting the verdict, "Spray or surrender." If all did so the task of protecting plants would be much easier, for the gardener is handicapped if forced to fight alone.

It would seem that arsenate of lead is winning a place over paris green as an insecticide. It sticks better, costs more, is popular and easily obtained. Paris green is not to be despised by any means.

The Relative Yield of Potatoes with Different Sprays

The potatoes in piles one and two show the proportion of marketable and unmarketable potatoes where the lime-sulphur spray was used once. Piles three and four show potatoes on which Bordeaux mixture was used once. The two piles on the right were not sprayed at all.

It will kill insects which chew if properly applied. The celebrated lime-sulphur, so effective as a fungicide in the orchard, is not to be recommended so highly as we once thought for vegetables. Our experiments would indicate that the old reliable Bordeaux mixture is superior to lime-sulphur for potatoes, and we believe for other truck crops. The grower has in bordeaux mixture and arsenate of lead a combination with which he may do very effective work against most enemies of the garden.

BACTERIAL DISEASES

We have a class of diseases, however, which spray mixtures cannot reach. These maladies are bacterial in origin, within the tissue, so that spraying the plant is of no more avail than spraying a man dying with tuberculosis. Melon wilt and the soft rots of some root crops belong to this class. Dig out the plants so attacked and burn them. You cannot save them and you may hinder the spread of the disease to the remainder of the field.

Plant lice cannot be poisoned. They do not eat, and therefore cannot be reached by a stomach poison. Lice suck up their food. They are usually very difficult to control. We may hope to reach them only by means of a contact poison, that is, something that will kill the insect by coming in contact with its body. Hot water is a good example of a poison of this kind.

Every gardener, if he would intelligently fight insect pests and fungoid diseases, must know his enemies. He must know something of their life history, the weak point in their life cycle, or in other words their most vulnerable point of attack. It is not necessary for him to know the scientific name or the exact number of joints in their hind legs, but a good working knowledge of his enemies is essential to the best success.

ENEMIES OF POTATOES

The potato is attacked by Early Blight, Late Blight, Flea Beetle, Blister Beetles, and Colorado Potato Beetles. Certain bacterial diseases also attack the plant which cannot be controlled by sprays.

Early Blight of the potato is a premature spotting and dying of the potato leaves, due to the work of a parasitic fungus (Alternaria solani). The occurrence of the Early Blight, however, is liable to be influenced by the general vigor and other conditions of the plant; yet there is no just basis for denying the parasitic nature of the disease. Early Blight is the cause of the early dying of potato tops, but does not cause rotting of the tubers.

The Late Blight and rot of the potato is so generally known that frequently this malady is simply called the potato disease. It is the oldest potato malady, and was the cause of the potato famine in Ireland. The spots cannot be easily confused with other potato diseases. These diseased areas frequently begin at the edge or top of the leaf and spread until the whole leaf is involved. They present in moist weather a dark, somewhat water soaked appearance with slightly purplish tint. Upon the tubers this fungus develops the well-known dry rot of the field and storage pits.

POTATO FLEA BEETLE

The potato is often attacked by a very small beetle which also attacks the tomato, cucumber and beans. This insect is commonly called the potato flea beetle. They often congregate in such numbers that the leaves of plants appear almost black with them. Potatoes and tomatoes often have their leaves so badly eaten that the leaves shrivel and die in the case of the tomato, although the potato usually pulls through.

COLORADO POTATO BEETLE

The Colorado potato beetle is a native of a strip of country which lies just east of the Rocky Mountain range and includes eastern Colorado.. In its native state the beetle lives upon the wild weeds of the potato family. The chief of these is the buffalo bur, but the beetle is quite a general feeder on plants of this group, including not only potatoes, but tomatoes, egg plants, tobacco, and pepper. The adult passes the winter in the ground. In spring the beetles emerge, seek food plants on which they feed and deposit eggs. These adults sometimes, though not always, do much injury. They die shortly after depositing their eggs. The eggs hatch in from four to eight days, depending on the temperature. The young reach full growth about three weeks later. Soon eggs are laid again, and the second generation hatches. Ordinarily two broods are all that we may expect.

REMEDIES

All of these maladies may be controlled by bordeaux mixture and paris green or arsenate of lead. Bordeaux mixture of the usual formula, four-four-forty, and if paris green is used, one pound to forty gallons of water is quite sufficient. Two pounds of arsenate of lead will kill the beetles with equal certainty, and it remains on the foliage longer, owing to its sticking properties. The first application should be made as necessary, about the time the Colorado potato beetle is hatching, and at intervals of ten days as required. Usually three applications will be quite sufficient.

The two principal enemies of the cabbage are the cabbage butterfly and the

cabbage root maggot. Where the cabbage butterfly spends the winter is not known to us; but these white butterflies are of perennial occurrence, as everyone must have seen as they flit over turnip, rape, cauliflower, and cabbage fields in early spring. The butterflies do no damage, but from the eggs which they deposit are hatched the green caterpillars which have been so destructive in many parts. There are several broods in the season. These caterpillars are easily controlled by arsenate of lead or paris green. Owing to the peculiar nature of cabbage foliage a sticker is usually added to the poison. We have found soap added to the spray as effective as anything for this purpose.

The white maggots that feed on the roots of cabbage hatch from eggs laid by a small fly somewhat resembling the common house fly, near the plant at the surface of the ground. If tarred paper discs are used when plants are set there will be little trouble. This disc prevents the deposition of the eggs. After the plant is attacked little can be done. Certain decoctions are recommended to be poured in the soil around the plants, but the task is almost hopeless.

OTHER CROPS

Cucumbers, squash, pumpkins, melons and other similar crops are all subject to the striped cucumber beetle. These wiry little fellows are not easily poisoned and not easily controlled. We have found bordeaux, though not a poison, as good as anything for this beetle. Bordeaux acts as a repellant. These beetles do not like its flavor and avoid plants so treated. Land plaster, road dust or even flour is of some avail. These substances protect the leaves by forming a close covering for them. The beetles will not eat through the powder and the plants are saved. The powder should be put on in the morning when the plants are wet with a powder gun or by sifting through a cheese cloth bag. Traps are sometimes employed. A few seeds are planted somewhat earlier than the main crop, around the borders of the field. The beetles congregate on these and may be poisoned by much stronger applications of arsenic than we would dare to apply to the main crop. If these trap plants are killed by the poison no matter. The bacterial diseases of the cucurbits cannot be controlled by sprays. The first plants attacked should be dug up root and branch and burned. Serious outbreaks are sometimes thus avoided.

With all summer sprays for vegetables thoroughness is the important thing to be sought. A plant thoroughly sprayed with a weak spray mixture is much more thoroughly protected than one partly covered with one twice as strong. All plants subject to attack should be entirely covered with their spray armor all the time. Then, and then only, are the plants safe.

Marketing Early Vegetables

E. E. Adams, Leamington, Ont.

SOME years ago it was the rule to ship some kinds of vegetables in barrels, hogsheads, boxes, or other packages. There has come a change. To-day we find many varieties of vegetables in packages of various kinds, attractively labelled and containing a definite amount of same varied commodity.

Things have changed with men's ideas. The marketing of many kinds of horticultural products has followed somewhat closely along commercial lines. Packages vary little now, as more advanced ideas have wrought out a new system, whereby more standard packages are used. These have proven very advantageous. It is rather confusing to have a large number of packages and as many different prices attached to them. We find some markets quote some lines of vegetables at so much per strap, so much per box, so much per hamper, and many other ways, which causes considerable confusion, but from the leading shipping centres now we find celery in cases of four to six dozen, tomatoes in four basket carriers and some in six basket carriers, cukes in what are called half-barrel hampers, lettuce the same, potatoes in barrels containing one hundred and sixty-five pounds, and so on. These packages being standard, buyers know what to expect when a quotation is given.

Some growers or shippers are using a brand or trade mark to distinguish the quality of the goods which they market, and much to their advantage, as buyers soon recognize an honest brand and ask for it on the market. A brand should include the name and address of the grower or shipper, as also the variety of contents of the package.

Much of the fruit and vegetable products are sent to market to some commission house to be sold for the best price obtainable on a basis of ten per cent. commission. This is at times a very satisfactory method, but it is not always the best. In the marketing of perishable stuff, we must do the best thing possible in order to avoid loss, and as commission merchants have usually a large trade to cater to, their services are very necessary to assist distribution, although some think otherwise.

For shipping hot house tomatoes we are using boxes measuring six by nine by nineteen inches and containing twenty pounds. These are all wrapped in tissue paper with the grower's name, and the box has a lithographed label on one end, and each end has a thin band of sheet iron nailed around it for security. These boxes are made of pine one-quarter of an inch thick and planed on one side. We also use corrugated paper all around the inside of the boxes as protection to the fruit. For hot house cucumbers we use the eleven quart basket, with a label pasted on the top before covers are made up.

Lettuce is shipped in boxes and barrels. Asparagus in eleven quart baskets, radishes in boxes, cabbages in bushel baskets, wax beans, field grown tomatoes, peppers and egg plant in the eleven quart baskets. Canteloupes are shipped in bushel crates and baskets, also in eleven and sixteen quart baskets.

Close attention is given to careful growing, packing and shipping. Every order received each day up to five o'clock is shipped promptly. Promptness in filling orders is to be regarded as one of the great essentials to success.

When applying nitrate to plants in active growth care should be taken not to scatter it on the leaves as it is very injurious to the foliage of many garden plants and vegetables with flat leaves.

Lettuce Grown by R. H. Ellis, Leamington, Ont., Spring 1912

The Canadian Horticulturist

Published by The Horticultural Publishing Company, Limited

PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

1. The Canadian Horticulturist is published on the 25th day of the month preceding date of issue.
2. Subscription price in Canada and Great Britain, 60 cents a year; two years, $1.00. For United States and local subscriptions in Peterboro (not called for at the Post Office), 25 cents extra a year, including postage.
3. Remittances should be made by Post Office or Express Money Order, or Registered Letter. Postage Stamps accepted for amounts less than $1.00.
4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.
5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.
6. Advertising rates One Dollar an Inch. Copy received up to the 18th Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.
7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,062
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

July, 1912 11,279

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed
THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

THE FRUIT DIVISION

One of the most interesting features of the report of the proceedings of the Dominion Fruit Conference held recently in Ottawa, now being distributed by the Dominion Department of Agriculture, is the account it contains of the discussion of the advisability of having a commissioner placed in charge of the fruit division. The most significant feature of the discussion was the determined manner in which the fruit growers pressed their point in spite of a manifest desire on the part of leading officers of the Department of Agriculture, including the Minister of Agriculture, that the point should not be insisted upon.

The fruit growers did well to recognize the fact that Dairy Commissioner Ruddick, who has been acting as commissioner of the Cold Storage and Fruit Divisions, also has done good work for the fruit growers. Nevertheless the fact remains that Mr. Ruddick is not a practical fruit grower, and that his training has been along an entirely different line. The chief of the fruit division at present must lay all his recommendations before the dairy and fruit commissioner. He has no power to consult direct with the minister of agriculture. This condition should not be allowed to continue any longer than possible. It must not be forgotten either that Hon. Mr. Burrell, while in the opposite ranks in the House of Commons, was one of the most severe and persistent critics of the present arrangement. Were the fruit division placed under the control of a commissioner possessing the necessary qualifications, nothing but good would result.

LAND AGENTS

It is possible for a country to have too much of a good thing even of land agents. This is being demonstrated in many sections of Canada. While the disastrous results that follow speculation in land are becoming more clearly recognized every year, the public as yet has not reached the stage where it realizes that the best and only effective remedy is to apply a sufficient tax on unimproved land values to curb this evil.

British Columbia owes much to its land agents. They have helped to develop thousands of acres of fruit land and to boom the fruit growing possibilities of that province to a degree that has made them an important factor in its settlement by an unusually high class type of settlers. There are indications, now, however, that in sections of the province at least, the boom in fruit lands has about reached its height for the time being, and that the work of settlement, instead of being promoted, is being retarded by the high prices being asked for fruit land. A letter received recently from a subscriber of THE CANADIAN HORTICULTURIST in British Columbia contains the following reference to this subject: "I hope that Ontario will never be blest with an army of land agents or speculators in fruit lands and town lots such as British Columbia has now. When a man has to pay two hundred to four hundred dollars an acre for uncleared land and spend another one hundred to three hundred dollars to clear it, he looks at it twice before buying. At present prices not much of this land is likely to be taken up for several years."

Land agents are now appearing in the fruit districts of Ontario, where they are receiving a warm welcome, because it is realized that they are likely to have an important influence in developing these sections. As yet there is not much danger of their operations proving harmful except possibly in a few sections of the Niagara District, but the time may not be far distant when this will no longer be the case. More and more the tend of taxation must be away from the taxation of improvements towards the taxation of land values. A fruit grower who sets out an orchard or vineyard should not be taxed for his enterprise. Instead we should tax those men who, while holding land idle, profit from the enterprise of their neighbors who improve their places. We should encourage the workers not the shirkers.

Last spring we drew attention in these columns to the fact that the Goderich Horticultural Society had adopted the pansy as the emblem for the town of Goderich, and that it purposed encouraging its culture until it should become a feature of the town. Now comes word that the Winnipeg Garden Club has adopted the sweet pea as its official flower. This is a most commendable line of endeavor. A few weeks ago the writer spent a couple of days in Galveston, Texas, where oleanders were blooming in front of apparently a majority of homes. The effect created by these beautiful flowers was beyond description. While it is not desirable that horticultural societies should limit their work too much to one variety of flower or shrub, there is no reason why more of our societies should not encourage especially the growth of some certain variety of flower or vine, as is being done in Goderich, Winnipeg and elsewhere. Let us make our towns and cities known by the beauty of their floral effects

While there are a number of sections in Ontario and the east that make the proud boast that they are the garden spots of Canada, they all fall far short of British Columbia in their ability to produce photographs to substantiate their claims. This does not prove that they lack the conditions they maintain they possess, but that they lack the photographs. For some years THE CANADIAN HORTICULTURIST has found it a comparatively easy matter at any time to obtain excellent photographs of orchards and vegetable gardens in British Columbia, but a much more difficult matter to secure illustrations of similar scenes in Ontario, Quebec and the Maritime provinces. Only recently a syndicate of publications wrote to us for illustrations of fruit scenes in the east for publication in a Metropolitan magazine. They seemed at a loss to know where to secure any. The fruit resources of the east will never be advertised as they should until those interested in promoting them realize the necessity of taking more good photographs and using them as opportunity presents.

In Ontario this year over sixty schools have been qualifying for the special government grant offered to those schools that teach agriculture through school gardens. There is probably no other province or state on the continent that is showing greater development along these lines. This is encouraging, and we may well hope that the good work that has thus been started will extend rapidly. Much of the credit for the success of this movement is due to the capable work of Prof. S. B. McCready, the director of elementary agricultural education.

PUBLISHER'S DESK

The next issue of THE CANADIAN HORTICULTURIST will be our second annual Special Exhibition and Packing Number. It promises to be the best issue of THE CANADIAN HORTICULTURIST we have ever issued. The cover will be special in character and the contents of more than usual interest. Naturally the subject of the packing of fruit will be given due prominence. Among the articles will be one entitled "How We Pack the Fameuse Apple," by Mr. R. W. Shephard, of Como, Quebec, and another entitled "Packing Fruit for the Western Markets," by Mr. Robt. Thompson, of St. Catharines. Mr. Ralph Eaton, of Kentville, Nova Scotia, probably the largest fruit grower in the Maritime provinces, has promised an article on "Popular Nova Scotia Apple Packs." Mr. Eaton was one of the pioneer packers of boxed apples in the Maritime provinces, and is especially well qualified to handle this subject. Mr. A. V. Harkness, superintendent of the Jordan Harbor Experiment Station, is to contribute an article entitled "Picking and Packing the Apple Crop." The foregoing are only a few of the many interesting features this number will contain. In addition it will be profusely illustrated. Our aim is to make each of these special packing numbers larger and better than their predecessors. Success promises to attend our efforts this year.

During the past few weeks representatives of THE CANADIAN HORTICULTURIST have been busy securing descriptions of Canadian gardens in a number of towns and cities. In this they have had the assistance of expert photographers, and we anticipate that the results, when published, will be most pleasing to our readers. The descriptions of these gardens will appear one at a time during the coming year. We are finding it difficult to obtain descriptions of good gardens in the eastern and western provinces, and, therefore, would be grateful to receive the assistance of some of our readers in these sections, and also in the city of Montreal.

Although the next issue of THE CANADIAN HORTICULTURIST will be a Special Exhibition and Packing Number, we do not desire our readers to think that the garden and other features of the paper will be in any way neglected. These will receive as much space as usual, and the subject matter will be most instructive and timely. There will be a page of garden notes containing advice concerning fall work in the garden, another Canadian garden will be described and there will be several articles on special subjects. Each department of the paper will be at its full strength, and the contributors will be among the best we can secure.

Confidence.

How much do you think a large manufacturing or other business concern, selling hundreds of thousands of dollars worth of goods annually would take and forfeit the confidence the buying public has in the quality of their goods and in their willingness to give their customers fair and honest treatment at all times? Were it possible to buy this confidence you probably could not purchase it at any price. It has taken years of honest dealing and reliable goods, and thousands, or perhaps hundreds of thousands of dollars spent in telling people about these goods through some of the many forms of advertising, printed and otherwise, to build up and maintain this confidence. Were this confidence once lost they would have to start all over again.

This is why the business concern which has advertised its goods extensively for years, and has built up a big business, is obliged to keep up the quality of the goods put out, and to maintain its reputation for fair and honest dealing. One dishonest transaction, or one dissatisfied customer will, in the end, mean a loss of many times any immediate gain which might be made through such transaction.

The publishers of The Canadian Horticulturist have, for years, been building up confidence between its readers and the advertisers, who use space in its columns, to tell about their goods. For years we have positively refused to publish liquor or tobacco advertisements, electric belt, patent medicine, and get-rich-quick schemes, or any kind of advertising to which we felt our readers might object, or which we felt to be questionable. To publish one dishonest advertisement would cause many of our readers to lose confidence in the advertisers who use The Canadian Horticulturist. This is why we are so careful to admit to our columns only such advertisers as we feel we can thoroughly endorse. And this is why advertising space in The Canadian Horticulturist is becoming increasingly valuable.

We do not admit advertisers to our columns except such as we believe are thoroughly reliable.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

Winnipeg

The Winnipeg Garden Club has adopted the sweet pea as its official flower. This flower is abundantly grown here, and it grows in the most luxuriant manner. Nearly every garden in Winnipeg grows sweet peas, and it is amazing to see to what an extent the vines extend. Vines seen by the writer have been six, seven and eight feet high, and of the most prolific growth. They flower abundantly, until late frost.

As a branch of school work, vacant lot gardening as it is being conducted by the club, has shown as good results as competitive spelling. In the United States gardening in some cases has supplanted manual labor training, and the results have been most gratifying. The returns from the city gardens, both in pleasure and profit, were excellent.

Toronto

The enterprising aim of the High Park District Ratepayers' Association is to make the High Park District of Toronto a "Section Beautiful." With this end in view, a trophy and shields are being offered by the horticultural section for competition by the householders in the district for the best kept lawns and gardens. Mr. Roderick Cameron, of the city parks department, recently conducted his summer inspection. The fall inspection will be made between August 20 and 30.

The effect of the competition has been marked. At the conclusion of his spring inspection Mr. Cameron reported that the beautifying of homes with shrubs and flowers was apparent in every section. The lawns throughout, he stated, were better than his greatest expectation and the points awarded showed keen rivalry in all streets. For the recent inspection a maximum of one hundred points was awarded. These points were apportioned as follows: Lawns, front ten, back ten; roses, hybrid perpetual and hybrid teas, fifteen, roses, climbing fifteen; hedges and evergreens, ten; climbing vines on house, ten, on fence, ten; flowering shrubs, ten; perennials and annuals, ten. In addition a bonus of twenty-five per cent on lawns and ten per cent on borderbeds was allowed where no gardener was employed.

An interesting and significant feature of the competition is the penalizing of high board fences. Where the fence is uncovered a penalty of twenty-five points is imposed, and where covered of ten points. Mr. Wm. Hunt, of Guelph, has acted as a judge.

Hamilton

A somewhat new line of work is being undertaken this year by the Hamilton Society. Arrangements have been made with certain members who are now visiting the gardens of different members of the society and sending descriptions of them to the city papers. Among the gardens that have been described are those of Mr. Stanley Mills, on Queen St. South, Mr. J. M. Hulls, on Charlton Ave. West, and a number of others. These descriptions are being read with interest by the people of the city, and attention is thereby being drawn to the good work the horticultural society is accomplishing.

During the latter part of June the society held a flower show, which was well attended. The ladies of the Babies Dispensary Guild served refreshments, and music was provided. The show proved a success.

Peterboro

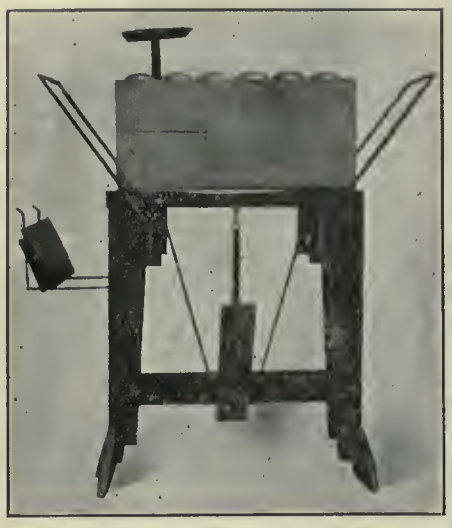
The officers of the Peterboro Horticultural Society, but more especially the secretary, Mr. C. H. Williamson, have been putting forth great efforts this year to extend the work of the society. As a result, over one hundred new members have been secured, which has brought the total membership up to over three hundred and fifty. This places the society among the leading societies in point of membership in the province.

Competitions are being held for lawns and gardens. Members of the society were given liberal options at the beginning of the season for both spring and fall delivery, and every member is supplied with THE CANADIAN HORTICULTURIST.

Have you read the advertisements in this issue? There may be something advertised that you particularly want just now.

Quick and Easy

That is the way the DAISY APPLE BOX PRESS works. A simple pressure of the foot brings the arms up over the ends of the box, automatically draws them down and holds them in place while being nailed. The fastest and only automatic presa on the market.



Pat. No. 104,535

If you pack apples in boxes, this machine will be a great convenience to you and will save you time and money. Write for prices to

J. J. ROBLIN & SON

Manufacturers Brighton, Ontario

See adv. of Barrel Press, on page 196

Fruit Growing in Ontario---Its Possibilities*

W. H. Bunting, St. Catharines, Ont.

IN addition to the general and widespread interest that has been developed in better fruit-growing, the problem of more satisfactory methods of fruit-selling has been carefully considered by many of those in Ontario who are engaged in the distribution of the product. To accomplish this in a profitable and successful manner, various methods have been made use of, and some important agencies have been established in recent years. So long as the individual grower consigned his fruit in a haphazard way to the nearest market, regardless of its ability to absorb the supply, or to the first commission man who might solicit his shipments, without any knowledge of his standing or reliability, there was likely to be loss and disappointment. This lack of system is being rapidly replaced by more satisfactory methods of direct sale. For instance, the grower in many sections is disposing of his product at the shipping station for cash to buyers who are handling quantities of fruit every day, and are in close touch with the market. Or he may, by regular quotations, establish a trade with the retail merchants or consumers in more distant towns and cities. Better still, he can, through the medium of strong cooperative societies of neighboring fruit-growers, secure all the advantages of unity and systematic organization, keep well informed as to the present market and future prospects, obtain better and cheaper transportation and in many ways obviate a large percentage of the losses and vexations of the old way of selling. This could never be accomplished by the individual working alone, and independent of his neighbors.

In the districts already referred to, there are a number of sections in which fruit-growing has become an important specialty, and in which every means is being taken by the great majority of those engaged in the business to secure the latest information and adopt the most modern methods to achieve success. Unfortunately this class does not constitute a majority of the fruit-growers of Ontario,—possibly not more than twenty-five per cent of them. The other seventy-five per cent are scattered all over the province and have planted an orchard, or are engaged in growing fruit, as a secondary proposition, supplementary to general farming or some other line which is their principal occupation, and in consequence have neither time nor inclination to give their orchards proper care or attention. In sections of this character the "lump" orchard buyer of the past has found a profitable field for operations. As the primary object was to buy as cheaply as possible, and having secured the crop to put out—I will not say pack—as many barrels as by hook or crook could be managed, there could only be one result. Many of the complaints of the inferior packing and grading of Ontario fruits during late years have arisen largely from this state of affairs, and from lack of proper appreciation of the care necessary to handle and transport fruit in good order, by those through whose hands it must pass on the way to market.

*Extract from a paper read at the recent Dominion Fruit Conference in Ottawa.

Apple Trees

We are producing hardy varieties of Apples and other fruits for the North. Our Nurseries at Pointe Claire, extending over 170 acres, are devoted to the growing of Hardy Fruit Stocks and Ornamentals, Roses, etc., etc. Our Apple Trees are **budded** on whole roots and grown under all the rigorous climatic conditions of this section. For this reason they are pronounced by experts to be best suited as stock for Northern planters, both in the Garden and Orchard.

Intending customers are urged to place their orders **now** while we have a full selection of the best standard varieties.

Catalogues and Lists cheerfully furnished Free of Charge

Canadian Nursery Co., Ltd.

(Charles K. Baillie, General Manager)

10 Phillips Place - Montreal, P. Q.

Apple Boxes

WE make a good box at the right price. It is especially suited for the apple grower and shipper.

One of our large customers last year used thousands of our boxes for the export trade. Such trade demands a strong, durable box. Our boxes gave every satisfaction.

Our Boxes are Right.
The Price is Right.
Let Us Quote You.

Barchard & Company, Limited

135-151 Duke St. TORONTO

A strong public sentiment is now being created among the growers themselves which will not tolerate careless or indifferent or dishonest methods of packing and grading fruit for shipping purposes. This sentiment ought to do much towards raising the standard of Ontario fruits, so that the claim frequently made that Ontario can produce the finest fruit grown on the continent may be amply justified.

THE NIAGARA PENINSULA

In the Niagara Peninsula, in the counties along the north shore of Lake Erie, in the districts bordering on Lake Huron, and also along the entire north shore of Lake Ontario, there has been a very considerable activity during the past few years in the increased planting of all kinds of fruit. This has been occasioned largely by the recent discovery of the valuable qualities found in lime, sulphur and arsenate of lead combined in a general spray mixture for the practical control of the majority of insect pests and fungous diseases which affect fruit trees. Although the proven efficacy of this spray has but recently been established, it is rapidly taking its place as the most important discovery of late years in the progress of horticultural knowledge. The insistent demand for all the fruit which can be produced has also done much to awaken this activity and accentuate it, until at present it is taxing the facilities of the nurseries to supply this country with trees and plants of the standard fruits.

I have referred to the cooperative movement among the fruit-growers of Ontario. I believe the first organization of this kind in the province was that known as the Niagara Peninsular Fruit-Growers' Stock Company, which was formed some twenty-five years ago by those veteran fruit-growers: Mr. A. H. Pettit and E. J. Wolverton and the late A. M. Smith, Murray Pettit and Dennis Van Duzer. The latter three, although no longer with us, are honoured and remembered as pioneers of the earlier days.

This company was formed under a Dominion Charter for the purpose of establishing reliable agencies to dispose of fruit to advantage, as well as to join in the assembling of car-loads of fruit for shipment to the north-west and the Maritime Provinces. It maintained a useful existence for many years, until it became superseded by local associations, in closer touch with the several districts covered.

The pioneer, however, of the present long list of cooperative associations in active operation may be said to be the St. Catharine's Cold Storage and Forwarding Company. Organized in 1897, the outcome of a condition of affairs which was becoming intolerable, it has steadily grown in scope and importance until at the present time it is one of the largest, if not the largest and most successful company in the province handling fruits and produce in a cooperative way. The success of this company has led to the formation of many others modeled on the same or similar lines, in various parts of the province, the majority of which are securing excellent results. With careful, competent management and loyalty of the members to one another, these associations should be able to solve many of the problems of successful distribution.

A new feature of the association or company activity has been in evidence during the past season, the outcome of which is being watched with considerable interest. This movement consists in the organization of companies, with more or less capital, for

Douglas Gardens

Oakville, Ontario

The best time to plant Pæonies, German Irises, Japanese Irises, Delphiniums and Phloxes, is in the early fall. The best time to give an order for these is **NOW.**

We offer 67 varieties of **Pæonies** at prices from 30 cts. to $3 per plant;

12 varieties of **Irises** at 15 cts. to 25 cts. per plant;

Delphiniums, Gold Medal Hybrids, a choice mixture, at 15 cts. per plant;

And 6 varieties of **Phloxes** at 15 cts to 20 cts. per plant.

("Miss Lingard" Phlox at 20 cts. should be in every garden.)

Daffodils must be planted in early fall. We offer 8 fine sorts at prices 2 cts. to 5 cts. each.

Our Fall Planting List, now ready for distribution, describes all of the above. Send name and address for a copy.

JOHN CAVERS

Announcement

The demand for **Pedigreed Nursery Stock** during the past season has been so heavy that we could not supply all our customers, and we have therefore very greatly extended our business.

Stock planted last fall has come through the severe winter in excellent condition and we feel warranted in again advising fall planting for most varieties of fruit.

We shall be glad to answer all enquiries and quote prices for October delivery.

AUBURN NURSERIES
QUEENSTON, ONT.

Winnipeg

We Want Your Fruit
and
Will Give You
A SQUARE DEAL

Dingle & Stewart
263-265 Stanley St. - Winnipeg

A Cherry Orchard Pays

Plant in Fall and Avoid Failures

CHERRY ORCHARDS PAY BIG DIVIDENDS

Toronto Wholesale Fruit Market Quotations, present season, quote—

Early Richmond and **Montmorency, $1.25** to **$1.50 per basket**

We offer Choice Trees for Fall Delivery at Special Prices for Orchard Lots

Send for Prices and our Cherry Circular

THE FONTHILL NURSERIES

Established 1837

STONE & WELLINGTON - TORONTO

CANADIAN NATIONAL

EXHIBITION

TORONTO

Aug. 24th—1912—Sept. 9th

$55,000.00 IN PRIZES

For Products of the Farm, the Garden and the Home.

Liberal Premiums for all classes of Horticulture.

ALL ENTRIES CLOSE AUGUST 15th

Daisy Apple Press

Used by all leading apple packers in Canada, United States and England.

Write for prices and complete information to—

J. J. ROBLIN & SON

Manufacturers

BRIGHTON, ONT.

Canada

See Advt. of Box Press on Page 194

Mention The Canadian Horticulturist when writing

the purpose of purchasing, or leasing for a number of years, orchards in various parts of the country, it being the intention to care for these orchards in accordance with the most approved methods. Should these companies prove successful, the several orchards so handled should prove splendid object-lessons to the surrounding country.

The Provincial Government has taken an active interest in horticulture in Ontario. A fruit branch has been formed, with Mr. P. W. Hodgetts as director; an Experimental Farm has been established in the tender fruit area, the gift to the province of Mr. M. F. Rittenhouse, of Chicago, who, an old Niagara district boy, has not forgotten the place of his birth. Some good results are expected in the course of time from the work conducted on this farm. The Ontario Horticultural Exhibition has grown from very small dimensions a few years ago to one of the largest annual displays of apples on the continent, second only to the National Apple Show.

If those of us who are engaged in the fruit industry in Ontario will rise to the dignity of the situation, and by every means in our power seek to put our product on the public market in such a manner as will remove every cause for complaint due to careless and indifferent packing and grading of what might otherwise be a high-class product, there is a bright future in store for the fruit-growers of the premier province in the Dominion.

Orchard Heating

Late spring and early fall frosts not infrequently prove disastrous to fruit and vegetable growers. It is encouraging, therefore, to note that orchard heating is considered to be a demonstrated success commercially in leading fruit sections of the United States.

Bulletins issued recently by the Nevada and Iowa Experiment Stations show that experiments conducted not only by the stations, but by private growers as well, prove that orchard heating is practical and within the reach of the average grower who has any considerable quantity of fruit that he desires to save. Where winds are high windbreaks are necessary. In Nevada it has been shown that even when the temperature falls as low at twenty-two degrees Fahrenheit and frosts occur persistently, the orchards can be protected during the season at an expense varying from seventy-three to ninety-five cents a tree. The maximum cost for each heating should not exceed ten to twelve and a half cents a tree. In an orchard of two hundred and fifty trees the average expense for each of thirteen heatings was a little over five cents a tree.

There are numerous styles of orchard heaters on the market in the United States. Their use is almost unknown in Canada. The cost of conducting experiments is not great. Profiting from the experience gained in the United States, some of our Canadian Experiment Stations might conduct similar experiments on a somewhat extensive scale in Canada to the advantage of the fruit industry.

I am glad to see the very great improvement made in The Canadian Horticulturist during the past year. The improvement in the quality and general tone of the articles has been most marked. The illustrations used in recent numbers are also very much better.—J. H. Bowman, Elmira, Ont.

We Sell Fruit Farms

HAVING been for years engaged in the real estate business in and around St. Catharines and having a good connection through the Niagara District, we are in close touch with real estate movements in this territory.

At present we have listed for sale a number of valuable fruit growing properties which at the prices offered will prove excellent investments either for the fruit grower wishing to increase his holdings or for the investor looking for a safe and profitable investment.

We will be pleased to send you a list of desirable properties with descriptions, locations and prices, or to show them to you if you are in the city and will call on us.

Melvin Gayman & Co.
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You Get
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For
APPLES
Packed in
BOXES

Up-to-date growers and shippers have demonstrated this fact. We make the boxes. Write us.

The Firstbrook Box Co., Ltd.
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Are You Setting Out Your Trees as Economically as Possible and are the Trees when Planted Giving The Best Results Obtainable ?

Let Us Send You FREE OF CHARGE our Pamphlets on the use of

STUMPING POWDERS

USED FOR

Planting Trees
Cultivating and Rejuvenating Orchards
Breaking Hard Pan, Shale and Clay Sub-Soils
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Prevents the Tremendous Loss from Flies

Flies cost the Farmers of Canada millions of dollars anunally by retarding the growth or fattening of animals and by greatly reducing the production of milk by constantly annoying the animals all summer. Every farmer or stockraiser knows this statement to be true from his own experience.

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"INTERNATIONAL FLY WAY"

It is positively guaranteed to be effective in Driving Away Flies, Mosquitos, and other insects which worry stock and reduce their earning capacity. It is harmless to the hair and skin and will be found perfectly satisfactory when used according to directions.

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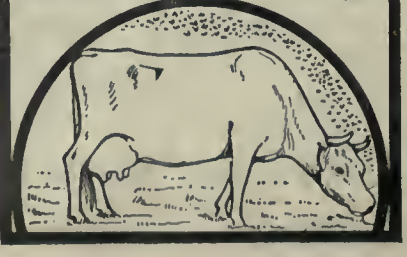

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25c. a tin, at your Druggist's— or write for free sample to the

NATIONAL DRUG AND CHEMICAL CO. OF CANADA, LIMITED, - MONTREAL.

191

The Fight Against Insects *

Dr. C. Gordon Hewitt, Dominion Entomologist, Ottawa

The three methods in which the Department of Agriculture of the Federal Government is dealing with the serious problem of insect pests are by legislation, by investigation and by education. When it is realized that about fifty per cent of our most injurious insects have been introduced into Canada from other countries, the necessity of taking steps to prevent the introduction of further pests, and the spread of serious pests already within our borders into regions of Canada in which they do not occur, will be readily understood.

The discovery of winter nests of the Brown-tail Moth on nursery stock imported from France in 1909 was chiefly responsible for the passage of The Destructive Insect and Pest Act of 1910. During the first year of our work under the Act over two and a half million plants and trees in Eastern Canada alone were examined and three hundred and ten winter webs of the Brown-tail Moth were found. When you realize that each of these winter nests may contain two or three hundred caterpillars of the Brown-tail Moth the importance of this work is obvious. Last season nearly four million plants were inspected in Canada.

THE BROWN-TAIL MOTH

In addition to the fumigation and inspection of imported trees and vegetation classed as nursery stock, a campaign against the Brown-tail Moth, which was first discovered in Nova Scotia in 1907, is being carried on by the Federal Department of Agriculture, in cooperation with the Provincial Departments of Agriculture of Nova Scotia and New Brunswick. To those acquainted with the ravages of the Brown-tail and Gipsy Moths in the New England States, where these moths were allowed to spread, the necessity of taking all possible means to obtain the control of this insect in Canada needs no emphasising. In the State of Massachusetts alone over a million dollars a year are being spent in the attempts to control these two pests. The control will never be obtained by artificial means, and resource has now been made to the importation of the parasites of these insects from the countries in which they are native, in the hope that ultimately with the aid of man's assistance, nature will be able to obtain the control.

In Nova Scotia the insect is distributed through the four counties of Yarmouth, Digby, Annapolis and Kings, and the suitability of the country to the propagation of the insect is indicated by the fact that in one case a winter nest or web was found to contain over eighteen hundred caterpillars. The insect infests not only the apple but also wild thorn, rose, oak and other trees. Last spring, for the first time, the insect was found to have spread into New Brunswick from Maine, along the coast of which it is prevalent. We are now making attempts to anticipate its arrival in large numbers by introducing its parasites and establishing these on the native insect before it arrives in force. Its abundance in Nova Scotia and New Brunswick is such that, unless it spreads seriously into the wild bush and forest, we shall be able, I venture to hope, if we leave no stones unturned, to keep it under control and to prevent it from attaining such dangerous proportions as it has obtained in the New England States.

*Extract from an address delivered at the annual convention of the Ontario Fruit Growers' Association.

MONEY IN GINSENG

An acre of matured Ginseng worth from $35,000 to $40,000. Learn how to grow it and receive price list of seeds and roots, also full information from successful growers.

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Cold Storage Fruit Warehouse

Finest Apple Rooms in the Dominion for
EXPORT AND LOCAL TRADE
Special Rooms for All Kinds of Perishable Goods

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LIMITED
53 WILLIAM STREET, MONTREAL

For the Land's Sake

Use the best Manure
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Good Crops

For Nurseries, Fruit Growers
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Makes poor land fertile and keeps fertile land most productive.

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DOMINION EXHIBITION
OTTAWA
Sept. 5 to 16, 1912
Jointly with
CENTRAL CANADA FAIR

All Cash Prizes increased 50 per cent. from $50.000 Federal grant. Growers of Fruit and Garden Vegetables should not miss this opportunity of competing for record premiums. Large number of specials offered in Horticulture Department.

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To 100 mile radius of Ottawa. Reduced passenger rates from Five Provinces and Two States. Unexcelled attractions.

Entries Close August 20th

Write for prize list, programme, etc.

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We manufacture a special line for greenhouses. It is of good quality, flat, squarely cut and even thickness, virtues which cannot be dispensed with for lapping or butting.

Shall be pleased to quote prices on application to any of our Canadian depots:

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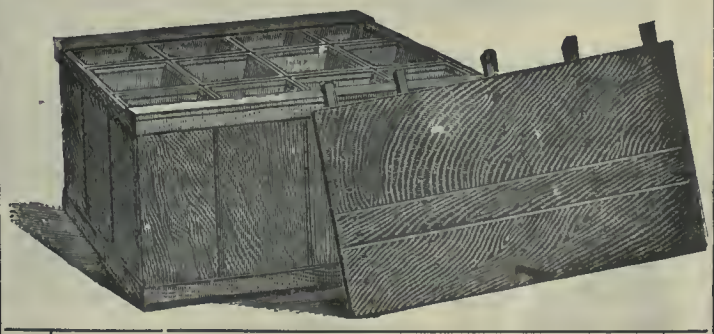

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IMPORT YOUR BULBS Import only the choicest quality. Write for price list at once. Prices lower than wholesale.
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YOU cannot farm without a wagon any more than you can keep house without a stove. It is something you need every day. You work it harder than anything else on the farm, and when the old one wears out you have to get a new one at once.

Figure out how many bushels of corn, wheat, or oats, or how many bales of cotton it takes to keep you in wagons, and then see how much you save when you buy a wagon that lasts longer than the average.

It is an easy thing to do, even though all wagons which are painted alike look alike. The difference in wagons is underneath the paint. It is the material and workmanship, as well as the paint of I H C wagons

Petrolia **Chatham**

which make them the best wagon investment for any farmer.

We tell you plainly what material goes into every part of our wagons, and we want every purchaser to convince himself before buying, that when I H C wagons are advertised as having birch hubs, maple axles, and long leaf yellow pine box bottoms, these are the materials actually used.

Such care is taken in the construction of the I H C wagons, and in the culling of the materials which go into them, that when a wagon reaches a farmer's barn, that farmer has one of the best wearing, easiest running farm wagons that skilled labor can make or that money can buy. There is no need to speculate in buying a wagon. Wear and tear and length of service are the points to go by. I H C wagons are made for nation-wide uses, with special features adapted to local conditions. Wherever sold they are right, and ready for use in that locality. The I H C wagon agent in your town sells the wagon best suited to your neighborhood. Ask him to go over the wagons with you. Ask him for I H C wagon literature, or write the nearest branch house.

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International Harvester Company of America
(Incorporated)

At Hamilton, Ont. London, Ont. Montreal, P. Q.
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I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A

In the carrying out of this legislation and work against the introduction and spread of introduced pests, the cooperation of all whom the successful carrying out of the work affects is absolutely necessary. If importers of nursery stock and other vegetation will comply with the regulations governing such importations the work of inspection will proceed as smoothly as if no regulations existed. Inconveniences are only introduced when the regulations are not complied with. Although fruitgrowers and others suffer very severely on account of the losses entailed by the work of such insects as have been introduced into Canada, such as the San Jose Scale, the Codling Moth and in many cases the Apple Maggot, they would suffer far more if other pests such as the Brown-tail Moth and the Gipsy Moth and other insects from foreign countries were introduced, and they cannot but realize that it is to their advantage to assist in every possible manner in the carrying out of the work which we are empowered to do by Statute against the further introduction and spread of serious and injurious insects.

New Fruits Increasing

W. T. Macoun, Dominion Horticulturist, Ottawa, Ont.

The numbers of new fruits of merit which are introduced each year is small. This is fortunate as fruit growers are not tempted to grow a large number of varieties. Many of them grow too many already. The time is coming, however, when there will be many new fruits of merit available for introduction and there should be some plan worked out whereby the grower will be kept from planting any large number of trees or plants of a variety which has not been strongly recommended by some institution or society. The practice of cooperative societies buying fruit trees for their members is a good one. In this way the number of varieties grown in a district is limited, and only those most suitable for the district are planted.

The reason why a large number of varieties of merit will soon be available for introduction is that up to within recent years the development of new sorts by the experiment stations has been carried on in a very small way, and few things worthy of being grown in the best fruit districts have been originated. All this is changed, however, and fruit breeding is now an important part of the work of the horticultural departments of a large proportion of the fifty odd experiment stations in the United States, and Canada also, if not doing her

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Good Prices Always

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INTERNATIONAL APPLE SHIPPERS ASSOCIATION

OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto market, we have established branch warehouses with competent men in charge at **Sudbury, North Bay Cobalt, Cochrane and Porcupine.** In time of congestion on the Toronto market we have a ready outlet through these branches. We never have to sacrifice your interests.

Branch Warehouses: Sudbury, North Bay, Cobalt, Cochrane and Porcupine

H. PETERS
88 Front St. East, Toronto

References : The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.

share, is at least doing something. Two states which are breeding fruits on a large scale are South Dakota and Minnesota. From South Dakota a number of new fruits have already been sent out, and the Minnesota State Breeding Station, though organized but a few years ago, has originated some good things already. The New York Experiment Station is beginning to distribute new fruits and have already sent out some new apples, raspberries and strawberries.

The standard varieties we have to-day are almost all of them chance seedlings from the thousands of seedlings which have sprung in America and Europe during the past hundred years or more, and it is scarcely to be expected that anything as good will be obtained from the limited number grown by comparatively few institutions and individuals for the especial purpose of obtaining new varieties.

British Columbia

An order for 250,000 fruit boxes has just been placed by the farmers' exchange, of Kelowna, British Columbia. This is the largest order for fruit boxes that has ever been given in this district. Four years ago 20,000 fruit boxes were sufficient to handle the Kelowna fruit crop.

Pear blight has been discovered in some orchards in the Summerland district.

As the orchards in the affected district use irrigation it has been suggested that excessive irrigation late in the fall and a consequent excess growth of wood may have had something to do with the present outbreak. The provincial government officials have been advising the growers in regard to the best methods of treatment, and have been giving public demonstrations.

For some time there has been a considerable agitation for the erection of a precooling plant at Summerland, it being realized that fruit could be shipped in a riper condition and carry further if cooled before shipment. Mr. Edward Smith has been appointed temporarily by the Department of Agriculture at Victoria to make investigations and experiments in the pre-cooling and storage of fruit and its transportation.

Arrangements are being made by the apple growers of the Kootenay district and by the agents who handle the products of the orchards to market the fruit on a considerable scale this year in the cities and towns of the prairie provinces. The assistance of the railway companies is expected.

Twelve fig trees of six varieties have been imported from England by W. J. Sheppard for experimental purposes in Nelson and district. Mr. Sheppard states that fig trees grow out of doors in the open and fruit ripens without any protection in England as far north as the Midland counties, and he believes that they should succeed in this section.

Nut culture is being attempted by H. H. Cleugh, near Nelson. He has planted English filbert, coh nuts, English walnuts, American black walnut, hickory, pecan and American sweet chestnuts and the trees and bushes are growing rapidly. Already walnut trees, the seed of which was planted in 1910, are three feet high, while hickory has reached a height of eighteen inches.

THE CANADIAN HORTICULTURIST is admirable and instructive. It possesses the art of convincing its readers in regard to the methods they should adopt to grow fruit profitably.—Auguste Dupuis, Government Fruit Station, Village des Aulnaies, Que.

The Western Fair

LONDON, CANADA

September 6th to 14th

1912

WESTERN ONTARIO'S POPULAR EXHIBITION

Good Classification for **Fruit and Flowers**

With Liberal Cash Prizes for same

SPECIAL RAILWAY RATES for Visitors and Exhibitors over All Railroads from Kingston to Detroit

Write the Secy. for Prize Lists, Entry Forms or any information

W. J. REID, President **A. M. HUNT, Secretary**

Exhibition

Don't forget the big **Exhibition and Fall Packing Number** for September. Circulation 13,000. Rate $37.50 a page—$1.25 an inch. Your ad. should be in early for this issue. Send it by August 15th.

Take A Scoopful Of Each— Side By Side

Take "St. Lawrence" Granulated in one scoop –and any other sugar in the other.

Look at "St. Lawrance" Sugar — its perfect crystals — its pure, white sparkle— its even grain. Test it point by point, and you will see that

Absolutely Best St. Lawrence Sugar **Absolutely Pure**

is one of the choicest sugars ever refined—with a standard of purity that few sugars can boast. Try it in your home.

Analysis shows, "St. Lawrence Granulated" to be "99 99/100 to 100% Pure Cane Sugar with no impurities whatever"

"Most every dealer sells St. Lawrence Sugar."

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65A

A Close Skimmer and Built to Last

THERE are two features that make a separator a good investment: close skimming and durability. Easy cleaning and easy turning are important, but not as important as the power to get all the butter fat and keep on doing it for many years.

I H C Cream Separators will make good under the most severe skimming test. If you will compare their construction with that of any other separator you will see why. Extra strong shafts and spindles, spiral cut gears, phosphor bronze bushings, thorough protection against dirt or grit getting into the working parts, and perfect oiling facilities, are the features that make these separators good for long service.

I H C Cream Separators Dairymaid and Bluebell

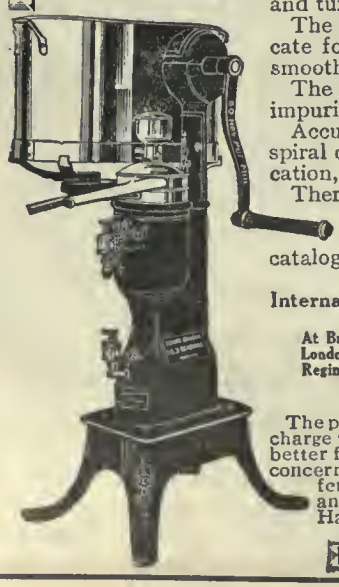
are close skimmers and built to last, and at the same time are easy to clean and turn. The reasons are these:

The interior of the bowl is entirely free from intricate forms of construction. Every part has a plain, smooth surface, to which dirt and milk do not adhere.

The dirt arrester chamber removes the undissolved impurities from the milk before separation begins.

Accurate designing and fitting of all moving parts, spiral cut gears, convenient crank, and thorough lubrication, make these separators easy to turn.

There are many other features worth your consideration. Ask the I H C agent handling these machines or write the nearest branch house for catalogue.



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The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizers, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A

Fruit Prices and Markets

The prices for small fruits already marketed have been exceedingly high in eastern Canada. Strawberries have been netting the growers two dollars and two dollars fifty cents a crate of twenty-four boxes as a regular thing. Want of proper organization among the growers glutted the Toronto market for one day, resulting in a very serious loss to the growers without a corresponding benefit to the consumers. The same day that berries were selling for five and six cents a box in Toronto, the Ottawa markets were bare at twelve and fifteen cents a box. There could be no better illustration of the absolute necessity for organization among the growers.

Cherries have been selling at from seventy-five cents to one dollar ten cents per eleven-quart basket, sweet cherries taking the higher price.

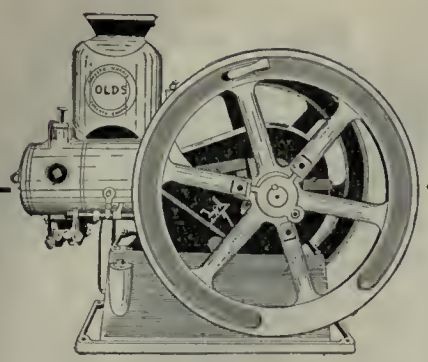
It is yet too early to offer any forecast as to the actual price of apples, but not too early to note the conditions of the markets. The European markets, without exception, may be considered ready to receive the usual quantities exported from America. The industrial disputes have been settled, and there is no immediate appearance of any disturbance that would lessen consumption.

The prospects in the United States are not quite so re-assuring. The crop for home consumption is above the average and evenly distributed, so that there will be no large demand from any particular section of the country. This is presidential year with somewhat more than the usual tendency towards stagnation in business, which will undoubtedly lessen consumption. It is possible that, if fair prices should be offered in the European markets, there will be a large surplus available for export from the United States.

Our own northwest is usually counted upon to take a large quantity of fruit, and conditions are such that more than the usual quantity will be taken this year. There will be strong competition, however, in selling. British Columbia will have a surplus for sale in the northwest territories. The northwest Pacific Coast growers are well organized to invade the Canadian markets. Indeed, authentic reports show that they have perhaps taken special pains to organize for sales in the Canadian northwest. Ontario will have a large surplus in the hands of those who habitually trade in the northwest and who are not likely to desert that market this year. Though Nova Scotia will not have so large a crop as last year, there will still be a surplus of early fruit that will find its way to the northwest. The success of Nova Scotia early fruit in the northwest last year was encouraging to the Nova Scotian growers, and it is not at all improbable that several hundred carloads of Nova Scotian fruit will be distributed in these markets this season.

There is this to be said, though, with reference to the marketing of the apple crop, that the largest shippers this year will be the cooperative associations. Consequently, the danger of overloading the markets is greatly minimized. The prospects, therefore, in a general way look favorable for a fair year for fruit growers and, though the high prices obtained for small fruits will not compensate for the short crop, conditions are likely to be much better for all varieties of tree fruits.—Dominion Fruit Crop Bulletin.

Is there something you want but do not see advertised in THE CANADIAN HORTICULTURIST? If so, write us. We can probably give you the information you wish.



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Quality Engine

The call to-day is for "Quality."

The matter of price does not carry so much weight with the careful buyer as the "quality" of the goods.

The **"OLDS"** Trade Mark stands for "Quality"—efficiency and economy.

Every **"OLDS"** Engine bears this mark and it guarantees the purchaser full value for his money.

All **"OLDS"** Engines are thoroughly tested and tried out before leaving the factory,—each and every one must be in perfect running order before it is shipped.

"OLDS" Engines are built in the largest factory in the world devoted exclusively to the manufacture of gasoline engines, and are the result of thirty years' experience in engine building.

JUMP SPARK SYSTEM OF IGNITION—Simple, Effective, Reliable.

WATER JACKET, CYLINDER, VALVE CHAMBER and MAIN FRAME are four entirely separate castings.

CYLINDER HEAD is cast solid with the cylinder.

PISTONS and **CYLINDERS** are made of the very hardest iron and are ground to a perfect fit.

PATENT SEAGER MIXER ensures a perfect mixture of gasoline and air, and works without a gasoline pump.

BEARINGS are large, well oiled and lined with genuine anti-friction babbit metal.

MASSEY-HARRIS CO., Ltd.

TORONTO
MONTREAL
MONCTON
WINNIPEG
REGINA
SASKATOON
CALGARY
EDMONTON

Eastern Annapolis Valley

Eunice Watts Buchanan

Several years ago it was said that it was only a matter of time before the San Jose scale would establish itself in the Annapolis Valley.

Living scales have been found on young trees in Aylesford, which were imported from Ontario in 1911, and since then others have been discovered on nursery stock imported this spring. The Nova Scotia Fruit Growers' Association at once called a special meeting in order to find out the best method of fighting the pest, especially as from twenty to fifty per cent of the Ontario nursery stock is reported to be infested. At the conclusion of the meeting in Kentville the following resolutions were introduced and seconded:

That the N. S. F. G. A. recommend that the Provincial Government appoint inspectors to make a thorough inspection of trees likely to be infested with San Jose scale, and that they give their inspectors authority to destroy or superintend the destruction of all trees infested with living scale or likely to be the source of future infestation of San Jose scale.

That in future all nursery stock imported into the province be inspected and fumigated at a port of entry deemed best by the government.

Since the above meeting was held, the local government has appointed six inspectors, who will work under Mr. G. E. Saunders, B. S. A., of Ottawa. The young inspectors are former students of Truro Agricultural College, and will inspect all nursery stock which has been imported into the province during the last two years. Their instructions are to destroy infested trees immediately.

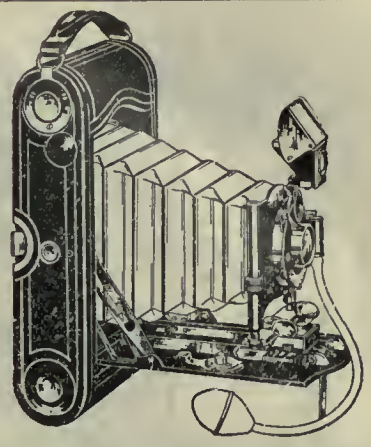
Brown Tail Moth has been found in orchards in Union Square and Lakefield, King's County.

Nova Scotia

In order to study more thoroughly in Nova Scotia the more serious insect pests affecting orchards and measures for their control, the Dominion Department of Agriculture is establishing an entomological field station in the Annapolis Valley, and in cooperation with the fruit growers will carry on experiments in other sections. Mr. Ralph Eaton has placed several acres of young orchard at the disposal of the Division of Entomology, for experimental purposes. Dr. Gordon Hewitt, Dominion Entomolgist, is now in Nova Scotia for the purpose of making arrangements for the carrying on of these investigations, and the location of the field laboratory. Mr. G. E. Saunders, B. S. A., field officer of the Division of Entomology, will have charge of the work.

This new development is part of a scheme which has been decided upon for the wider study of insect pests. A satisfactory study of these destructive agencies and measures for further control can be carried on only in the regions where they commonly occur, and for this reason a number of entomological field stations, each of which will consist of a small laboratory in charge of a trained entomologist, working under the direction of the Dominion Entomologist, are being established in those parts of Canada where they are most needed. Nova Scotia and New Brunswick are each to have such a station. In Nova Scotia, the Bud Moth and Brown Tail Moth will be studied more especially. It is also intended to very carefully investigate the San Jose scale situation.

If it isn't an Eastman, it isn't a Kodak



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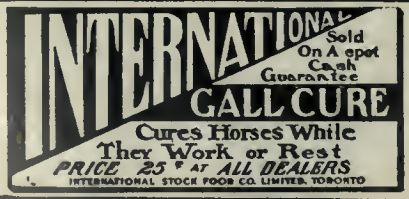

Montreal

E. H. Wartman, Dominion Fruit Inspector

On May fifteenth we received our first consignment of California cherries, beautifully packed in ten-pound boxes. These sold as high as five dollars fifty cents by auction, or fifty-five cents a pound or thirty-seven dollars a bushel. How do these prices compare with our home grown cherries? Last season they sold at six cents a pound first quality, of course loosely in eleven quart baskets, or three dollars a bushel against thirty-seven dollars, a big difference and a big profit lies somewhere.

On June twelve we received our first California apricots, which auctioned at four dollars for four basket crates of about twelve quarts, or thirty-three cents a quart.

The season's business in United States strawberries has been large. I have never in the past ten years seen them land in better order. Prices to the consumer have been moderate. Lawton berries and peaches were on our market in small quantities by June 12. Large quantities of Florida tomatoes arrived during May and June. The greatest failure in this fruit is the greenness. When picked some are so green as not to ripen under the best conditions after arrival here. Give me tomatoes grown at Macdonald College under glass this time of the year at double the price of Florida's for delicious flavor. The boxed fruits from California are so beautifully and attractively packed they cause general admiration and boom the trade. I have talked with our fruit men about this packing, and am afraid they too often say we can't do it, when I think if they would try hard they would find out that they can.

Fruit Crop Prospects

The prospects of the apple crop as reported last month, founded upon the fruit bloom, are not borne out by the "set" of fruit. There has been an exceptionally heavy "drop" even where the "set" appeared to be fairly good; but in many cases, especially in orchards that bore heavily last year, notwithstanding the full bloom, little fruit is expected. The damage by the Tent Caterpillar, over a wide area comprising the eastern part of Ontario and western and southern Quebec, has been serious. Nevertheless it should be noted that correspondents usually underestimate the quantity of fruit at this season of the year just as they are inclined to overestimate it on the appearance of bloom. It is not improbable, therefore, if conditions are favorable, that an improvement will be reported later in the season.

Taking one hundred as a standard or full crop, the percentages for the Dominion stand at sixty-seven per cent for early apples, sixty-nine per cent for fall apples and sixty-five per cent for winter apples. The average, for the Dominion, of all kinds of apples, therefore, would be sixty-seven per cent.

PEARS

Pears have depreciated somewhat during the month. Blight has been worse than usual this season, but even apart from that the "drop" has been considerable, and the crop will be only moderate. The Kieffer and Bartlett are showing best. In British Columbia pears will be somewhat lighter than was expected last month, but yet a good crop.

PLUMS

The depreciation in plums has been somewhat marked. The prospects this month are for a crop somewhat below medium,

The Canadian Horticulturist

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Standardizing Canadian Fruit Packages

Alex. McNeill, Chief, Dominion Fruit Division, Ottawa, Ont.

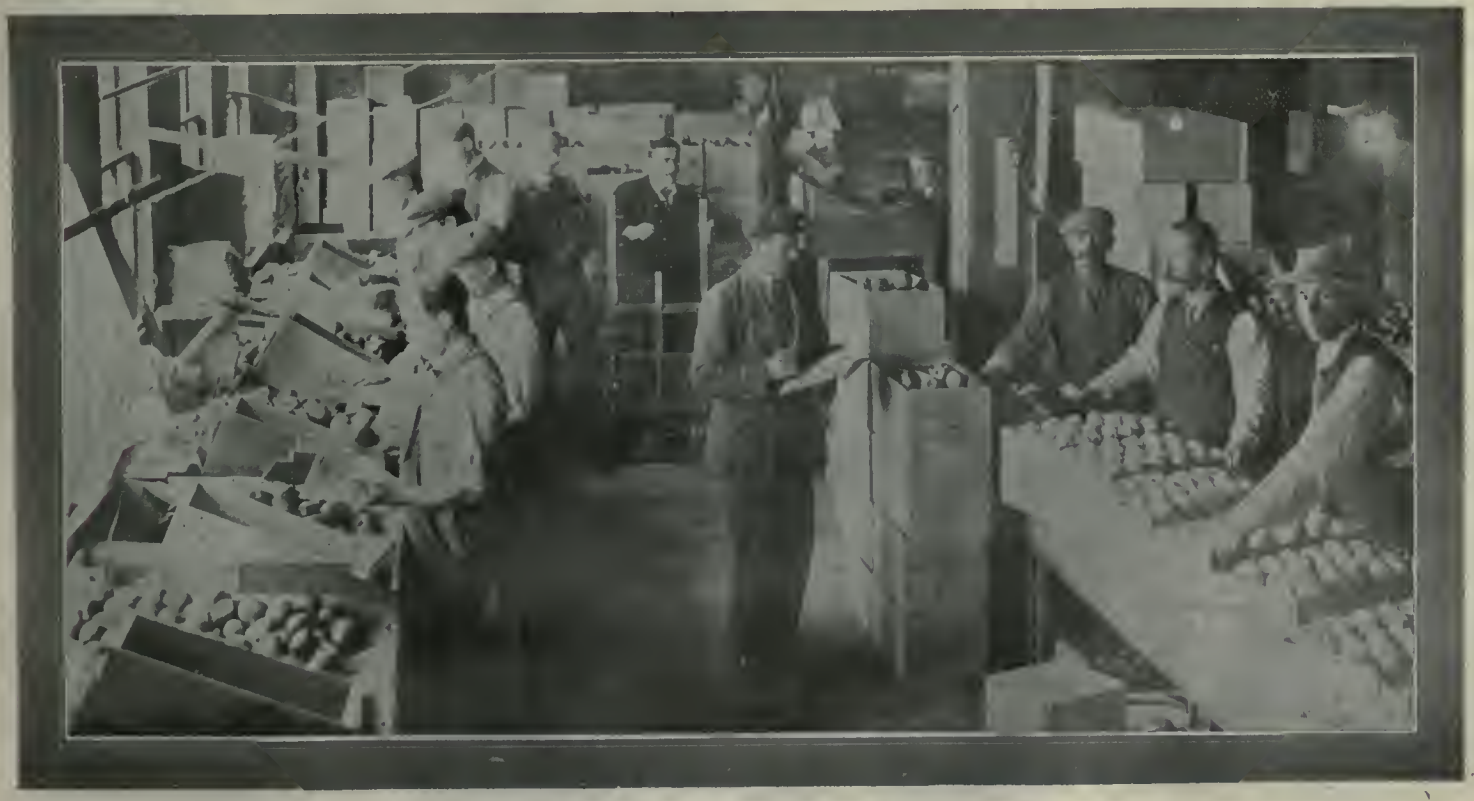
SO long as Canadian fruit growers confined themselves to supplying the local markets only, the question of uniformity of packages did not count particularly. Of late years, long distance markets have become more and more important and it is not too much to say that in a short time the long distance market will dominate the fruit trade. Under these circumstances the present is a favorable time to secure uniformity in packages throughout the Dominion. The importance of this feature is realized. Among the many reasons for having uniform packages none, perhaps, is more important than the question of economy in manufacture. Where the manufacturers know that all packages must conform to certain dimensions they can cut their material and they can calculate with reference to it much more readily and with far greater saving than where the matter of size is left to the whim of everyone who wishes to give an order. Manufacturers are intensely interested in uniform packages.

Alex. McNeill

If packages are standardized many things can be done by machinery that otherwise would have to be done by hand. They can use up large quantities of material that might otherwise go to waste and they can give prices with confidence where the matter of dimensions is permanently established. The honest fruit grower has everything to gain through the standardization of packages. He wishes only to secure what is coming to him and is willing and anxious to give full measure. He does not want, however, to use packages five, ten or twenty per cent. larger than his neighbor uses. He is, therefore, often in a quandary to know just what package he may honestly use. Fortunately in Canada we have already standardized certain packages with very satisfactory results. Nevertheless, much remains to be done.

STANDARD PACKAGES

The apple barrel is standardized as to its minimum size, and this size applies to pears and quinces as well. The box is standardized for capacity for the home market as well as for the export market. The fruit basket is defined in four sizes, fifteen quarts or more, eleven quarts, six quarts, and two and two-fifths quarts. Dimensions are prescribed for the eleven and the six quart baskets. So far as these packages are concerned, it may be said with perfect truth that they are giving good satisfaction. However, if the Inspection and Sale Act is to be amended certain improvements probably will be made in all packages. For instance, in the case of the barrel it has been suggested that two sizes be prescribed, one corresponding to our minimum size and the other to the size used more frequently in Ontario. It is, I think, the general impression that to



Packing Apples in the Farmers' Exchange, Kelowna, B.C.

Photo copyright by G. H. E. Hudson, Kelowna, B.C.

standardize two sizes of barrels so nearly alike, would be a great mistake. No doubt there will be further consideration of this subject which will enable the fruit growers to arrive at some standard for one size alone. At present there seems no better compromise than to define a minimum size only, though the dimensions used do not quite harmonize.

The ten by eleven by twenty inch box is giving excellent satisfaction. British Columbia fruit growers who use the box exclusively, find no difficulty in packing any size of apple. Beginners, perhaps, would find two or three sizes convenient, but the objections to having several sizes in a packinghouse are too strong to be easily overcome.

The berry box in two sizes—a four-fifth quart and a two-fifth quart—have proved satisfactory. The four-fifth size is large enough for the best results with strawberries, and the two-fifth box is extremely convenient for the softer raspberries.

In baskets, the four sizes prescribed by the Inspection and Sale Act, fill the bill perhaps as well as any size that could be prescribed. Suggestions have been made that a round bushel basket should be prescribed, inasmuch as a bushel basket is an extremely convenient package for local markets and even for markets more or less distant. But the want of uniformity in the capacity of the reputed bushel basket makes it difficult to quote prices.

It may be fairly said, therefore, that Canada has, up to date, done well to standardize packages, and we are saved from the chaos that prevails in the English local markets and the markets of the United States. The want of uniformity in packages used by English fruit growers has done, perhaps, as much as anything to curtail and limit the extension of the local fruit industry, especially with reference to the use of fresh fruit. It can be said, too, that very great difficulties are experienced in the large markets of the United States owing to the want of uniformity in fruit packages from different parts of the Union.

IMPORTANT NEEDS

There are, however, certain needs developed by a long distance market that require consideration. For instance, a standard pear box is very much needed; the apple box is somewhat too large, and the half size might with advantage be prescribed. The half box, again, is considered by some unnecessarily small, and it has been suggested that the ordinary apple box be used with the depth cut down to eight inches, and it is a question whether the five by eleven by twenty inches, the eight by eleven by twenty inches or some other size should be the standard for pears. One thing is certain, the size of the apple and the pear box must agree in two dimensions at least so as to facilitate packing both apples and pears in cars.

Another objection to the five by eleven by twenty inch box is that the length is too great for the depth for good looks or for strength. Some weight, of course, must be attached to this objection, but it would take experience to prove that the objection is serious.

PEACH PACKAGES

Up to date the basket has been the favorite package for peaches and serves the purpose fairly well, so long as we confine it to local markets. But there are grave objections to the basket when we come to ship to long distance markets. So long as the basket is handled quickly and without piling in large lots, the fruit is well protected; but it will not bear shipping in full carload lots to advantage. The sides are weak and are not braced to resist a side strain, and the motion of the cars as well as the pressure of the upper layers of the fruit, damage the fruit below. For these reasons the stiff package, corresponding to a shallow box with or without a middle division, appears to meet the needs. Here again it would be convenient if it were possible to get this box to conform in two dimensions at least to the apple and pear box to facilitate loading mixed cars.

Cherries in Ontario so far have been marketed, for the most part, in six and eleven quart baskets, but these packages are quite unsuitable for the long-distance market, and there seems to be no reason why a four-basket crate, such as is used in British Columbia, should not be used for cherries and plums to take the place of the six and eleven quart basket. Be it said here that there is no thought whatever that such a crate as this would entirely supplant the basket. The basket is the cheapest and most convenient package, and for the nearby market serves every purpose, and there appears to be no disposition to dispense with it. The same package, or something very similar, might also be used for tomatoes, especially the early.

The whole question would be the matter of the size of the baskets and whether they could be conveniently put into a crate that would ship with other packages. It is extremely desirable that this should be done, if possible, and the problem before the Canadian fruit growers —and one that cannot be solved offhand —is to harmonize the outside measurements of the packages so as to make the loading, storing, and packing as simple a matter as possible.

If a standard outside size could be set for all these packages, it would make it particularly convenient for the manufacturer who wants as few sizes as possible in his raw material.

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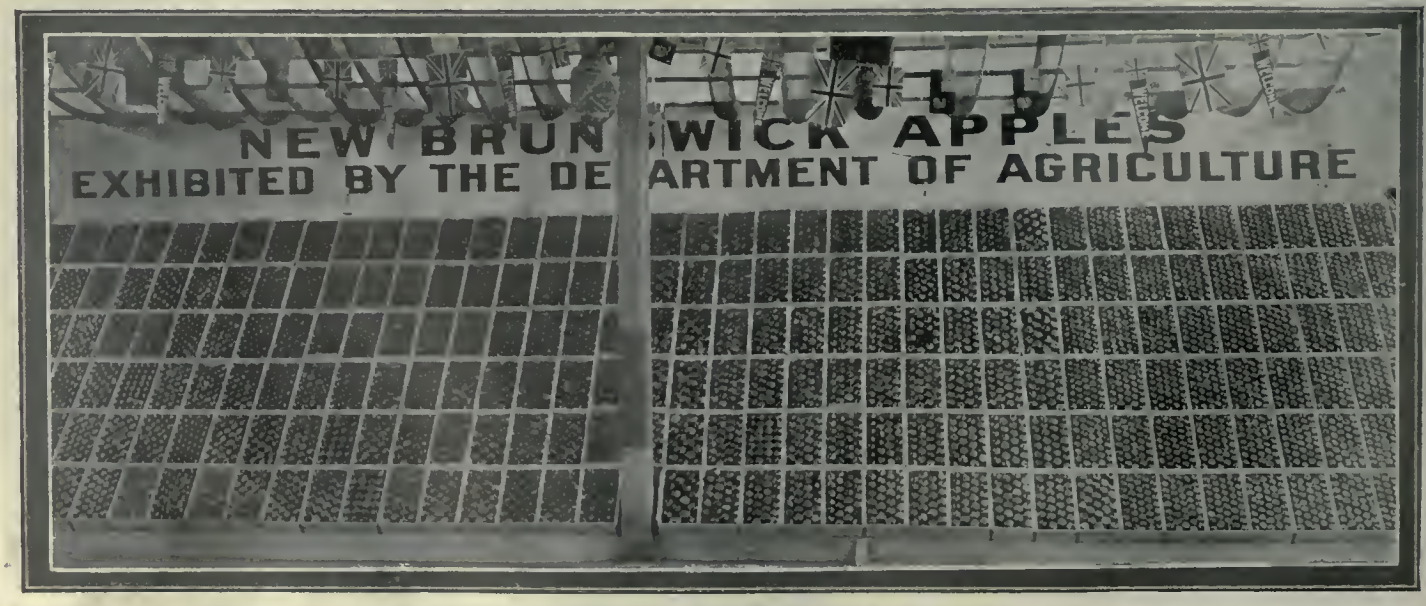


An Evidence of what New Brunswick Can Do in the Production and Packing of High Grade Apples. Notice the Different Packs Used

Cooperation in Packing and Selling Fruit

Dr. H. Johnson, Grimsby, Ont.

COOPERATION on the part of growers in the packing and sale of apples, or other fruit, has met with unqualified success in every case where any society or organization has been conducted on a proper business footing. Contrariwise, every case of failure in cooperation can be traced to inefficient management. Yet the fact remains that there are still many fruit growers very half-hearted, if not actually hostile, in their attitude towards cooperation. It will be found that growers of this class are either unaware of the benefits to be derived from cooperation on a business basis, or else that they have been disappointed in the results achieved by some organization of which they have formed part, and which has not had the advantage of capable management.

The trend of all modern business or industrial operations is the sub-division of labor; and the greater the degree to which this sub-division is carried, the cheaper will prove the production or distribution of the goods, whatever they may be, and the higher the ratio of profit. Hence, on merely theoretical grounds, cooperation in packing and selling fruit is a great step in advance, because it creates a sub-division in the labor of the fruit grower, whose time should be given entirely to raising produce and not to selling it. A fruit grower may be, but as a rule is not, a business man. In either case he is making a mistake if he attempts to sell his own fruit, because it may be taken as a sine qua non that better prices could be secured by a salesman whose sole time is given to selling fruit. No grower who looks after his orchards has time to study markets. A salesman, on the other hand, has ltle else to do.

Practically speaking, therefore, the success or failure of a cooperative organization is narrowed down to the question of obtaining a good salesman and an efficient manager to look after the concern. These two qualities may be united in one man, and in small societies money could be saved by combining the two functions. But in a large concern, which handles a big amount of fruit, it is better to keep the management and sales departments separate, and have each under the charge of a suitable man.

The Fruit Producing Possibilities of Eastern Ontario as Demonstrated at the Last Ontario Horticultural Exhibition

That cooperation has benefitted the grower in many sections is evidenced by the prices now obtained for the produce raised. In the case of apples a price frequently offered by the buyer, and judged by the farmer to be a good one, was one dollar a barrel on the tree. Many sales, as a matter of fact, took place at lower figures, and some were effected at not more than fifty cents. In sales of this kind the buyers put up the pack while the grower usually supplied labor for picking.

In Norfolk county, Ontario, under cooperation the price to the grower for the years 1909 and 1910 rose to two dollars a barrel on the tree. The average f.o.b. price under the Norfolk association was three dollars a barrel, which is really equivalent to two dollars on the tree, expenses being counted as follow: Cost of selling, twenty cents; picking, fifteen cents; packing, fifteen cents; barrel, forty cents; hauling and loading, ten cents; total, one dollar.

Around Oshawa the net return also now averages two dollars a barrel on the tree. In the Burlington district, which has worked up an export trade to England, the price to the grower averages not less than two dollars ten cents on the tree.

The case of the Hood River (Oregon) organization, however, supplies the best argument in favor of cooperation. Before the Hood River Apple Growers' Union was formed the average price realized by growers was one dollar twenty-five cents a bushel box. Since

Picking Prunes in Mr. Stirling's Orchard, Kelowna, B. C.

Picking Rhode Island Greenings, Beaver Valley, Georgian Bay Dist., Ont., Average, six barrels a tree

organization the average f.o.b. price netted is two dollars fifteen cents a box.

In this connection the question might be asked whether Canadian growers are not making a mistake in retaining the barrel as the chief package. It would seem that better prices can be obtained for boxed apples. At present the supply of boxed apples in the United States is not equal to the demand, while the inquiry for barrelled apples has been small.

One of the first difficulties met with in all cooperative societies is to find a way of paying each member a fair price for all fruit sold through the organization. All growers do not produce the same quality of fruit. Some are careless, some indifferent, while others are not content unless they raise really first-class stuff. If all sales are pooled the latter category of growers naturally suffer and do not receive the extra reward due to them.

The only way out of this difficulty is to have all fruit graded or packed at central receiving stations, and to pool sales of each grade separately, crediting each member with the number of packages of the particular grades delivered. This is a fair way out of the difficulty, and one that is not difficult to put into practise, as it merely entails the services at the central station of a receiver who is a good judge of fruit (in the case where the fruit is put up by the grower) and an efficient staff of packers for fruit put up in central stations.

In the case of berries of all kinds the number of grades should be strictly limited to two: First-class berries and poor berries.

It is poor policy for any individual, and much more so for a large organization, to market poor quality stuff, and all berries which are not first-class should be sent to the canning factories. It will be found that the factories are prepared to contract with large cooperative societies at much better prices than with individuals, the reason for this being obvious: They can afford to give a better price, as they do not have to send round a lot of men touting for small contracts among growers. In no case should poor fruit be thrown on to the market, as it merely breaks the price and does not satisfy the consumer. The general Canadian public is wealthy enough and is prepared to pay a fair price for good fruit, but it does not require trash at any price.

As regards cherries, there is no particular difficulty in grading. They may be classed conveniently as Number One Sours, Sweets, and Number Two Sours, Sweets. Samples of the same variety will not be found to vary greatly from one orchard to another in the same season, although there may be a good deal of variation from one year to another.

It is when we come to apples or peaches that the real difficulties begin, since in the case of these fruits the differences in quality from one orchard to another are tremendous. Hard and fast rules as regards packing and grading must be made by each organization according to the market in which it is selling.

In the organization of an apple union the following are the chief points, as emphasized by an expert from the Hood River Valley, which are essential for success: The organization must be a large and powerful one in command of a wide acreage. This gives the society a large quantity of apples for sale and enables it to a certain extent to make its own price. It is advisable to sell the whole output to one man, or corporation. In putting up the apples, the packer is the judge and not the grower. Each packer must be registered, given a number, and made responsible for grade and pack. In no case must the packers have any interest in the orchards or in the sale of fruit.

In the Hood River Valley the packers are paid at the rate of thirty-five cents an hour, with board; or if they prefer it, at the rate of seven cents a box. This is a good wage, but a good class of labor is required, as the work is of a responsible nature. All members contract to sell the whole output of their orchards through the medium of the union, and every year they come in and sign a paper giving as close an estimate as possible, of the expected return of each variety of fruit. Tenders for the purchase of the crop are invited on this estimate.

Every box of apples delivered by the Hood River Apple Growers' Union is guaranteed true to grade and all layers uniform with the top.

The foregoing simple principles, which have been strictly carried out, have made for the phenomenal success of the Hood River Union: and all fruit selling organizations which have not been equally successful should apply these principles in the future. It does not matter whether the fruit is apples, peaches, or otherwise. All fruit sold must be guaranteed true to grade and this cannot be done except in the manner outlined.

THE BEST METHODS

Any well managed organization will quickly discover which methods of grading and packing are the best suited to its particular requirements. At the same time it would be a step in advance for the fruit industry if all organizations could agree to a universal system of packing and grading.

There is one point on which Canadian growers and dealers in fruit seem to make a great mistake, and that is in over-estimating the value of large fruit. A large apple or a large peach has no better flavor than a medium-sized or even a small specimen. Yet in Canadian wholesale markets all peaches which do not attain a certain size are put out of the number one class. The same thing applies to apples in the manner in which they are packed by some of the Canadian organizations. Better prices would be obtained by the grower if less attention was paid to size and more to quality.

Apple Packs and Packing

R. M. Winslow, Provincial Horticulturist, Victoria, B.C.

WHILE a packed box of apples looks simple enough, it must fulfil certain requirements to be considered well put up. First, and most

A Two-Two, Three-Four Pack—Fifty-six Apples in a Box.

important, the pack must be firm. There must be no room for the fruit to shift in any way. It is often possible to stand a box on end without the cover nailed without any of the apples falling out. This is usually impossible if each apple does not touch all those surrounding it in the proper way.

The bulge or swell is also important. The idea is that as the apples lose moisture and shrink, the cover which has been pressed down tightly over the bulge will contract and continue to hold the apples firmly. The bulge is secured by turning the apples when packing, so that the slightly longer diameter is vertical. Doing this becomes second nature by practise. It is sometimes necessary to turn the end apples on their side, in the end-on packs, in order to get this just right.

In order to create some pressure on the end rows of apples, the fruit at both ends should be from one-quarter to three-eighths of an inch above the top of the box. The cover presses this down that much quite easily without bruising, and the elasticity of the fruit will keep it tight for some considerable time.

There is at present some reaction against the bulges of one and one-half to two inches common a few years ago. Experience has shown that a bulge of one and one-quarter inches, counting both top and bottom, is sufficient. More is necessary with the end-on packs than with the side packs. This applies also to the height of the ends.

Regularity of pack is very important. When an irregularly packed box is opened at the side, it shows how the packer may start to pack a box in one size, and may change half-way through the box. Where the change is made apples are liable to be very much bruised, on which account this practice is to be condemned, and the application of the term "stacked pack" indicates the essential dishonesty of this proceeding, which is poor packing and worse morality.

ATTRACTIVENESS ESSENTIAL

The attractiveness of the finished pack is very essential. Our apples rely a great deal on their appearance for high-priced sale, and the finished pack should be attractive in the regularity of size, smoothness of the wrap, and the alignment of the fruit in the box.

The above points deal only with the mechanical operation of packing. Not less essential, but even more so, is the grading of the fruit to size and to color. Grading to size is usually done in British Columbia by the packer himself, and he should use every effort to make the box uniform throughout. A good packer must be conscientious, quick, and accurate. The ability to learn to pack fruit is natural, and a big percentage of people do not possess it. Packers are born, not made.

Our apple box, twenty by eleven by ten inches, is the result of many experiments, some twenty or more sizes having been extensively used in California before the present sizes were finally adopted. The result is that practically all sizes and shapes of apples can be put into our boxes in the diagonal packs. In the very large sizes it is necessary to pack some apples on the square, three across and three deep in the box. The square packs, as well as the offset, we know from actual trial, are usually unnecessary. The buyers are beginning to be suspicious of packers who still insist on their use, and quite rightly so.

In the accompanying illustrations there are shown the principal diagonal packs. A study of these will show the beautiful regularity of the diagonal system. The flexibility of this pack to meet the requirements of apples of different sizes is learned only by experience, but as soon as a packer grasps the underlying principles of the diagonal pack there is no incentive to the use of the older and undesirable methods.

THE DIFFERENT PACKS

For the two-one diagonal pack the apples must be too large to fit in three in a straight line across the box. Start with two apples, one in each corner, then one between these, then two at sides, and so on. Second tier—Start with one in the centre of the end, over blank space, then two, and so on, covering the blank spaces. The third tier comes directly over the first, covering the blank spaces in the second tier. All two-one packs go on the side.

A Two-Two, Six-Six Pack—Ninety-six Apples to the Box.

A Two-Two, Five-Six Pack---Eighty-eight Apples to the Box.

In the two-two diagonal pack the apples must be large enough to fit in, four in a straight line across the box. Start with two apples, one in left-hand corner and one half-way to right corner, both

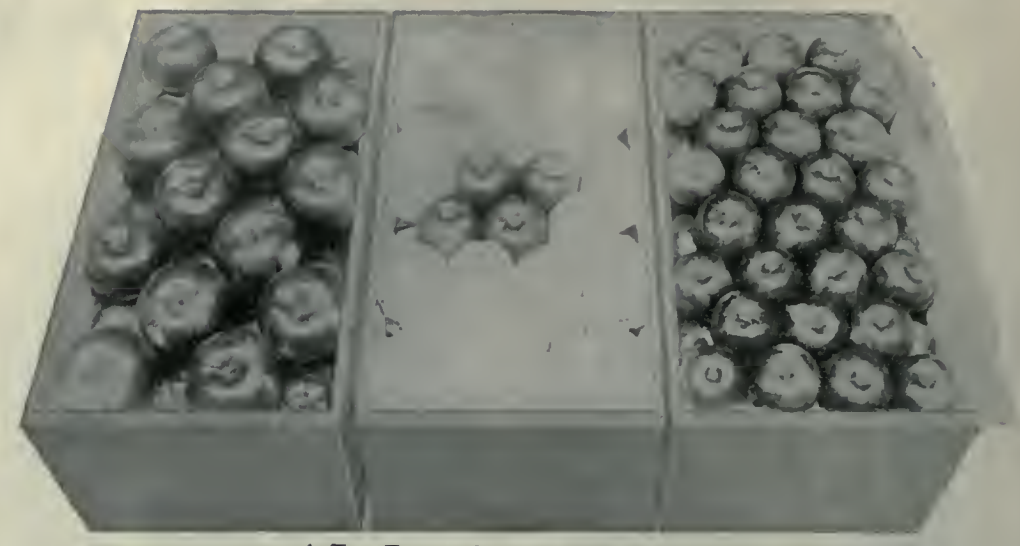
A Two-Three, Four-Five Pack. One hundred and thirteen apples to the box.

with stem towards packer. Then two more—one between first two and the other between the second apple and the right side of the box—both calyx towards the packer. Then two more, each in line with first and second apple, and so on, keeping each two in straight line across the box to ensure diagonal lines being straight. Finish tier with apples in same relative positions at far end as at near end, that is, farthermost two, stem to end.

Second tier—Start with two again, one in right-hand corner and one half-way to left corner, over blank spaces, stem to packer, and follow on with next two, calyx to packer. Finish tier with farthermost two covering the two blank spaces at far end of first tier, with stem to end of box again.

All open spaces between apples in the lower tier are now covered by apples in the second tier, so that the bottom of the box cannot be seen. The third tier follows directly above the apples of the first tier; the fourth tier is directly above the second tier.

The proper bulge is secured when the ends are slightly above the level of the top of the box, with a gradual rise to the centre from each end. An inch and a quarter to an inch and a half bulge at the centre is correct. The cover should touch every apple in the top tier, thus giving equal pressure on every apple in the box. This applies to every apple-pack. To get the bulge correctly, choose apples slightly larger or longer for the centre of the box.



A Two-Two and a Three-Four Pack.
Note the improvement in the appearance of the wrapped fruit.

For the two-three diagonal pack—The apples that will fit in, four in straight line across the box, and not small enough to fit in five across, come in this pack. They all should be packed on end, calyx up. Start with three apples, one in each corner, and one exactly half-way between them. Then two in next row, then three again, and so on, keeping each row of two and three in straight line across box to ensure a good alignment always. Work in the longer specimens towards the centre of the box, and flat ones in the ends, to give the bulge. This done in every tier brings the bulge without perceptible difference in the size of apples.

Three Tier, Seven Long. Sixty-three apples to the box.

Second tier—Start with two, covering the blank spaces left between the first three of first tier, then three and two, and so on. Third tier—Same position as first. Fourth tier—Same position as second. Fifth tier—Same position as first and third.

Long-shaped apples come high in this pack, to avoid which reverse alternate tiers—that is, put the second tier stem up, instead of calyx; third tier, calyx up; fourth tier, stem up; fifth tier, calyx up.

It is sometimes necessary to get the correct height to set the centre layers slightly on a slope, lengthwise with the box, which brings the pack lower.

Nova Scotia Methods

G. H. Vroom, Middleton, N.S.

Box packing is being taken up by the cooperative fruit growers associations in Nova Scotia. Gravenstein, King, McIntosh, Wolf River, Blenheim, and a few more of the showy varieties are put in boxes for export. The local market is also claiming a share of the box fruit.

The standard box is used. It is made of spruce, three quarter inch ends, half inch sides, and quarter inch top and bottom. The barrels and boxes are carefully branded in accordance with the Fruit Marks Act.

The transportation facilities have been greatly improved. The railway service is ample and carefully managed so that fruit is not injured in transit. The steamship companies are painstaking and see that the ships are well ventilated, and also that the barrels are carefully handled and properly stowed on board ship.

There has been an improvement in the quality of the barrels used for apples. The ninety-six quart barrel is used exclusively, made from soft wood, mostly spruce. The ends are planed. The hoops are nearly all birch split in half, and shaved even and smooth. This hoop does not give the barrel so good an ap-

pearance as the flat hoop does but it is durable and answers the purpose well. Some barrel makers use the flat hoop for part of their output.

This applies almost entirely to the county of Kings, where large and up-to-date factories are in operation. Second grade material is used for potato barrels.

The advancement in method in Nova Scotia has been very marked in recent years, and yet we feel that the apple growing industry is still in its infancy. The next fifteen or twenty years will see still greater improvement and advancement. The country is capable of much greater development, and the industry needs improving in many ways before it will be what it can be made. The motto of the Nova Scotia fruit growers is "advance."

How We Pack the "Fameuse" Apple for Export

R. W. Shepherd, Como, Que.

THE famous apple, celebrated as the most delicious apple of its season, and raised in the orchards of Quebec and eastern Ontario, seems to be dying out. At least the areas of Fameuse orchards in the province of Quebec have been much curtailed by the recent development of building and real estate boom in the vicinity of the city of Montreal. Hundreds of acres of orchards, principally planted with Fameuse, have been sold within the last four or five years for building lots.

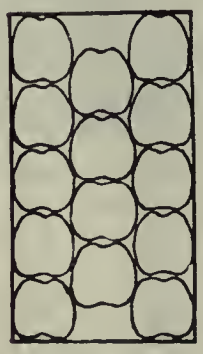
If the orchards that are being planted out on the Island of Montreal contained a greater proportion of trees of the Fameuse variety, there would be some hope that our most famous dessert apple might be retained, but, unfortunately, most of the large orchards planted in recent years contain a very small proportion of that most delicious variety. The McIntosh Red, said to be a seedling of the Fameuse has become popular with our growers. It is easier to grow, it is a handsome variety, and it has commanded high prices up to the present. Therefore, it is being largely planted.

There is no variety that commands such a high price as the Fameuse, when it is landed in England in good condition. I say "when landed in good condition." That is the important point. Everyone knows of what delicate texture is the flesh of the Fameuse and how thin the skin. Not much profit can be expected from shipping number one Fameuse to England in barrels. To be carried in barrels all fruit must be pressed tight, and the delicate Fameuse apple will not stand that kind of treatment. For years Montreal exporters of Fameuse in barrels have found that this apple is a "risky" variety to export. Therefore it is necessary to adopt some other package than the barrel.

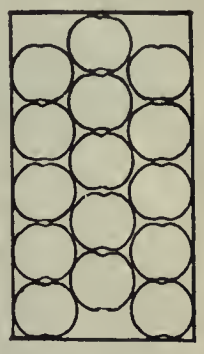
The Government box, twenty by eleven by ten inches, does not carry this fruit in as good a condition, for the table of the rich, as is required. The mere fact of tightening the box by the "bulging sides" is too much pressure on the fruit. Of course, wrapping each specimen in paper improves matters, but I have found, after thirty years' experience in exporting this delicate apple, that the only sure and certain method is to pack the fruit in the pasteboard compartment case, as shown in the accompanying illustration.

Great care should be taken in picking the fruit. The insides of all the baskets of the pickers should be lined with some such material as burlap. The sorting tables in the orchard should be covered with canvas and the baskets of fruit emptied carefully on them. An old friend of mine always insisted upon his pickers' hands being gloved, when picking Fameuse, in order to prevent any possibility of bruising. The less handling the Fameuse apple gets before being placed in the export package the better. Therefore, I always prefer to pack my Fameuse in the compartment case in the orchard.

Until the compartment case was adopted for transporting the highest class of Fameuse apples to England, the English people never obtained that superb dessert apple in the condition in which we know it. They had been accustomed to receive barrels of Fameuse from friends, but always in a bruised and damaged condition, and, therefore, its reputation as a dessert apple did not reach the pinnacle which it maintains amongst those who receive them, annually, in Government cases. If the fruit is carefully handled and carefully packed in these cases, the apples, as a rule, reach the consumer in perfect condition and even with the bloom on them.



A Two-One, Four-Five Pack. Forty-one Apples.



A Two-One, Five-Five Pack. Forty-five Apples

Packing Fameuse Apples for Export in Mr. Shepherd's Orchard at Como, Que.

METHODS OF PACKING

The apples are not wrapped in paper but are selected on the packing table for the sized squares in the three sizes of cases which we use for the Fameuse, viz.:

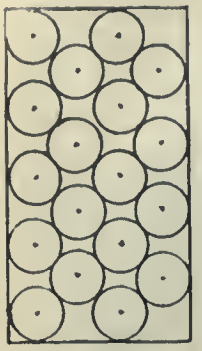
A Case—Two and five-eighths inches diameter of apple, contains one hundred and ninety-six apples.

D Case—Two and a half inches diameter of apple, contains two hundred and twenty-four apples.

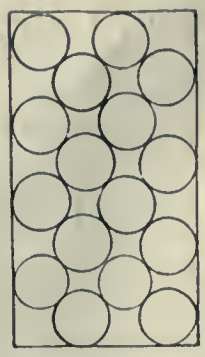
G Case—Two and three-eights inches diameter of apple, contains two hundred and fifty-two apples.

A sheet of white paper is placed on the bottom of the case, then a rack of squares, then a pasteboard tray, and so on. The top layer is covered with a second sheet of white paper—which is stencilled with the name of the orchard.

After the cover is nailed on with two wire nails, the corners are bound around



A Two-Two, Four-Five Pack. Seventy-two Apples.



A Two-Two, Four-Four Pack. Sixty-four Apples.

with a special hoop iron, one-half inch wide. The case is then stencilled with the name of the orchard, the variety of the apple, and the grade, "Fancy" or "number one" as the case may be. Great care must be taken to see that the pasteboard fillings, and the fruit after being packed, come flush with the top of the case and that there is no slackness. In other words, the fillings must fit the case exactly and have not more than a quarter of an inch play any way.

The fruit must not be squeezed into the squares, nor yet be so slack in them as to turn around. The fruit is placed in the squares stems up. The packers soon get accustomed and select the correct size of apple for each square readily. A good and careful packer can pack about twenty cases a day. I do not ask them to do more, because the chief thing is to select perfect fruit and fit them correctly into the squares.

DIRECT SHIPMENTS

The package is too costly to export for sale on the open market. My trade is shipping direct to the consumers, either on orders from this side or on orders from the consumer on the other side of the Atlantic.

If shipped to the open market you do not get compensation for the excellence of the selection of the fruit or for the expensive package. But private customers' orders increase from year to year; for the fruit reaching the consumer in such excellent condition is a recommendation. Customers tell their friends and thus the business grows steadily.

It takes time to establish such a business, that is, a trade direct with the high-class consumer. It is not a trade that can be worked up in a day, or a year, but like every other trade in a specialty, it is the excellence of the goods that sells them.

THE GENTRY LIKE IT

La Fameuse, as a dessert apple, seems to meet the requirements of the English gentry. They use the Fameuse for the fruit course at the dinner table and they do not require a large apple. They prefer the medium size, say two and a half inches in diameter to any other size. They consider the McIntosh Red too large for the dessert table—and moreover, the quality of the Fameuse is considered preferable. There is that rare delicacy of skin, texture of flesh, and a peculiar slightly saccharine flavor in the Fameuse which no other apple of its season possesses. It is this that makes it so popular with English people who can afford to pay almost any price for fruit which suits their palates.

My advice to growers in districts where the Fameuse attains its greatest excellence is to plant more trees. The Fameuse is a difficult tree to grow, its constitution seems not so robust as in days gone by—and McIntosh is supplanting it; but the day is not far distant when McIntosh, which is being produced in greater abundance every year, is bound to enhance in price. Therefore, it will be a very profitable apple to grow in the future.

Packing Fruit for the Western Market

Robert Thompson, St. Catharines, Ont.

MY subject covers a large variety of tree fruits as well as tomatoes. I will therefore only try to give a few of the points that have come under my observation, and which have been put in practice, during some twenty years' shipping and packing. This includes the experience of looking after the loading of one hundred and fifty cars of fruit yearly, packed by various shippers and by our company.

The first point we must realize is that while fruit may be well packed during the warm months, that alone is not sufficient. It should first be taken from the orchard quickly to the cold storage, to refrigerator cars, or to the coolest spot available. If it is taken to a refrigerator car, the cars must be well iced and kept so, and the bunkers should be full when the cars start on their journey. The cars must be fitted so that there will be a circulation of air through the fruit and over the ice. The car or cars should rarely be loaded to their full capacity with soft fruits.

Plums have been found to carry well if picked when they are about half colored and then packed in small baskets or fillers. We have had good success with Burbanks, Bradshaws, and even more tender varieties in six day trips.

Peaches should be picked when full grown and just nicely colored. They are then firm. They can be wrapped and packed in the California box, eighteen and a half by eleven by four and a half inches, or in the Georgia carrier. Another way in which they carry fairly well is to pack in six quart baskets, two tiers unwrapped. The price for these is not as good as for wrapped boxes. The western market does not net more than from three to four cents a pound, and if this price can be obtained in Ontario I would not advise anyone to ship west.

Tomatoes should be gathered when just red all over and firm to the touch. They will then carry to perfection as far as Winnipeg and Brandon. For more distant points they will require to be a trifle greener. The stems should be

Packing Fruit in the Orchards of Johnson Bros., Forest, Ont.

The work is usually done in the Packing Shed. Mr. D. Johnson, who stands in the centre, is the president of the Ontario Fruit Growers' Association.

rubbed off wherever they will touch another tomato. The six quart basket appears to be the popular package for the trade. Tomatoes do not require wrapping.

Pears should be picked when full grown and firm, and then graded and wrapped and packed in boxes, eight by eleven by twenty inches or eight and three-quarters by eleven by eighteen and a half inches, with a good bulge. The boxes always sell better than baskets. There is no serious competition in pears from British Columbia.

Grapes are usually gathered and placed in six quart baskets in the vineyard and shipped the same day or next. Our grapes should be cut into the baskets loosely and taken to the packing house and held for a day or two. The baskets can then be filled and covered. The grape stems are then wilted and will carry longer distances, and the fruit will arrive in good condition.

Summer and fall apples can be packed in baskets and boxes, according to their distinction, and late fall and winter varieties in boxes and barrels. The boxes can be packed almost as quickly as barrels if there is a central packing house to take the apples to when picked.

Those growers who intend to ship west should make up their minds that they will follow up their shipments for a number of years. It is a mistake to ship only a few cars and then quit. There is an unlimited market there for our fruit if we will only get after it.

Attractively Packed and Well Arranged Exhibits of British Columbia Coast Fruits

September and Autumn Work in the Garden

R. S. Rose, Peterboro, Ont.

AUTUMN is now nearly upon us, so it is time that we looked around our gardens to see what plants did well, and to note those that did not do what was expected of them. Mark a place where they should do better next summer, for those worthy of a further trial. Some may not have received enough sunshine, while others may have had too much.

I have heard some gardeners (amateur) say that there was nothing to do in the month of September. I do not agree with them, as in my small garden I can always find plenty to do, such as cutting down the plants that have finished blooming, putting the finishing touches to seed and bulb beds, getting a place ready to dump all the dead leaves I can get together for covering purposes as a protection against the cold winter, as well as preparing a place to put fresh manure, which should be procured just as soon as the ground is hard. Keep this all winter, so that you can have it early in the spring to start work with. Keep all grass clippings and weeds and mix these with the manure.

I take note of the coloring of my background, which is chiefly of the perennial phlox. This is in order that when sowing or planting annuals in front of them I can get what color effect I desire. Try as much as possible to have one color throughout the other and yet not be offensive to the eye. I do not water my beds during the month of September, unless the weather is very hot and dry, more than three times a week, and sometimes not that often, if the evenings are chilly.

Towards the end of September comes the time to slip the plants that you want to keep and also for potting plants for house culture. Having no greenhouse we use all the windows facing south.

When potting plants for the house, if you have to use a new pot, give it a thorough soaking in a tub of water, as on account of its great porosity it will absorb a large quantity of moisture. If an unsoaked pot is used young plants are often robbed of moisture when they need it the most. Before this is discovered your plants will be too far gone to be of much use.

I do as much work during the latter part of September as I can in order that I may have the beds ready for their winter covering, as during October and the beginning of November one is simply

Paeonies Grown by Miss Anna Moyle, Richmond Hill, Ont. (See Article on Page 214)

Asters and Sweet William
See article this page.

rushed off one's feet, cutting down, pruning, cleaning up and covering before the heavy frosts set in.

Do not leave any of this work until the spring, as you will then need all the time you can get for more important work. This method also kills all germs and weeds, which is one of the most important factors if one wants to have a good garden.

Do not think that because it is the between period of summer and winter that your garden does not require the same attention you have been giving it during the hot months. This is a great mistake. All plants, shrubs, and so forth, require just the same attention during September, and a great deal more during October and November. In fact from April until November your work should never cease if you desire good results.

An Experience With Paeonies

Miss Anna Moyle, Wyncroft, Richmond Hill, Ont.

The illustration on a preceding page shows a pæony in my perennial border. In September, 1910, while setting out the first plants in my border, a friend asked me, "What are you going to do with those long strips of ground?" When I told her she said: "You may have all the plants in my bed. I am going to seed it down; the old things won't flower." I assured her that they would if well fed, but she was equally certain that they never would. I dug up, and divided eight small, sickly-looking pæony plants.

The following June nine had one fair-sized bloom each. This year the one shown in the illustration had eighteen flowers when the photograph was taken, four of which do not show, and seventeen buds, all of which opened.

Floral Suggestions

Wm. Hunt, O.A.C., Guelph, Ont.

Freesias are the sweetest possible little flowers for the window. The bulbs should be potted early in September. Six or seven bulbs should be put in a five inch pot in good loamy potting soil with plenty of drainage. Put them in the window at once after potting. Do not give them too much water until well started. Dry off the bulbs gradually after they are through flowering. Place the pot away, when the foliage is turning yellow, in a cool, dry place. Keep them dry until the following autumn. Shake them out of the soil then and pot the large bulbs only as before. The small bulbils are of little use for growing again.

Valotta and Amaryllis should be brought into the window before frost. Some liquid manure should be given them after they are well started in the winter, especially if they have not been re-potted.

Old petunia plants should be cut well back when in the border late in September, and potted early in October into small pots in rather sandy soil. If re-potted later into larger pots in good potting soil they will give a lot of bloom nearly all the winter. They must, however, be cut back before being potted in the fall, to be successful with them.

Bring Epiphyllum or Lobster Cactus into the house early in September before frost. Light soil, not too rich in fertilizers, with plenty of drainage, is necessary for these plants.

Winter flowering bulbs cannot be done without if the window is to be kept bright. By potting these in the fall and rooting them well first in a dark, cool cellar, room, or cupboard, and bringing them into the window as required, a succession of their bright, cheery blossoms can be had from Christmas until Easter.

Success With Asters

J. H. H. Waring, Galt, Ont.

Having met with some success in the growing of asters and Sweet William it has occurred to me that possibly readers of The Canadian Horticulturist would like to hear how it was obtained. The accompanying illustration will give an idea of how some of them looked. The asters shown are the White Crego.

From one packet of seed I raised about two hundred plants, and lost none from either insects or disease.

The hot-bed, when well cared for, is ahead of the greenhouse for raising strong, healthy stock. Many of our asters were over five inches in diameter. Had a few flowers only on each plant been allowed to form they would have averaged six inches in diameter. There were over a thousand blooms on a small number of plants open together and they made a fine effect.

Nothing suits the aster better than a strong clay made quite friable by freely working it when dry and adding a liberal dressing of good, rich, rotted stable manure. If the clay has been well dug in the fall so much the better. If the soil is sandy a liberal dressing of land plaster will improve the chances for a good display. The aster should not be allowed to suffer from lack of water.

My Sweet William were superior to any I have yet seen. They were greatly admired by many visitors.

A Back View of the Home of Mr. W. Martin, Lowther Ave., Toronto
On the balcony are Wistaria roses and flower boxes.

Canadian Gardens--An Attractive Spot in London

A. J. Elliott, Aylmer, Ont.

ARTICLE No. 9

AMONG the many enticing gardens owned by citizens of London is one on Dundas Street that is characteristic of its owner, Mr. Metherall. Having retired from his former pursuits Mr. Metherall is free to enjoy his garden to the full. Thus he has become quite expert in his experiments with plants and flowers as well as in the manufacture of rustic work, principally articles made from cedar saplings.

The Entrance to the Garden

The first thing that catches one's eye as they approach Mr. Metherall's large brick residence are the rustic arch and fence entrances on both sides of the house. The verandah is also fronted with a long rustic flower box filled with geraniums, fuschias, begonias, and creepers.

Passing through the archway I found that the garden was one large lawn. In this respect it is unique. There is not a path in it. Although Mr. Metherall keeps an automobile and has a garage at the back end of his garden, there is not a roadway even for that. It just runs over the sod to get in and out. When I spoke to him about this, Mr. Metherall asked me what were the use of paths. He contended that they only took up land, and said that he did not need them. On looking around his garden I concluded that in his case he was right.

Dotted all over the lawn are beds of tube-rooted begonias, foliages, hydrangeas, altheas, roses, pansies, geraniums, ageratums, and cannas, while close up to the house were planted beds of geraniums, daisies, heliotrope, pinks, ferns and orchids. There were round beds, square beds, oval beds, and beds of geometrical and other figures and all alive

The Center of the Garden

with fine bloom. Dropped in here and there were isolated shrubs, roses, seats, a dove cot, and a not-to-be-forgotten cast-iron wolf and rabbits.

In the centre of the lawn, for so I must name it, is a rustic summer house, under climbers, and a row of rustic vases filled with geraniums, nasturtiums, and creepers. This sets off the garden nicely.

THE BORDER BEDS

Down both sides run borders composed mostly of perennials, although some annuals have been given a place there. There were: Perennial phlox, petunias, columbine, begonias, Sweet William, peonies, salfraglossis, geraniums, sweet peas, golden glow, asters, snap dragons, salvia, gladiolus, larkspur, and shrubs. These borders stop at the lawn where two semi-circular beds of cannas make a fine ending to an especially fine stretch of mixed lawn and flower garden.

Flower Beds and One of the Side Fences

Considering the soil, which is a light sand, nothing like the clay soil of London South, that roses delight in, Mr. Metherall has by hard work, the application of manure, and close attention, obtained some fine bushes, that while they are blooming this year, give hopes for better things next season. His choice in this line is Madame Leawood, Mrs. Sharman Crawford, Magna Charta, Frau Karl Druschki, Prince Camille de Rohan, Ulrich Brunner, Mrs. John Lang, General Jacquinimot, Baron Rothschild, though, of course, he has the ramblers Tanschendron and Dorothy Perkins. For manure he uses barnyard manure and the commercial dried manure from the stock yards. For the in-

The Effect at the Side of the House

The Route the Automobile Travels

sects that infest the rose, he finds that common soap suds sprayed on are the best remedy.

The barn and garage are situated in the centre of the back end of Mr. Metherall's property. On either side, and separated from them by fences, are his vegetable garden and nursery ground. As Mr. Metherall has only owned this property for some eighteen months, the accompanying illustrations serve to show the amount of work he has done to bring it up to its present attractive condition. He is expecting better results as the years roll on, and as he is one of nature's gardeners, although he never dreams that he is a good one, he expects by reading, experimenting, and listening to others, to achieve success in this line as he did commercially in days gone by. One point I have noticed as I visit different gardens is that their proprietors all take The Canadian Horticulturist, and they all state freely that it has helped them to achieve the success with their gardens that they have.

Harvesting Onions

P. E. French, Dept. of Agriculture, Victoria, B. C.

IF the onion tops do not fall down flat on the ground at the proper time about the middle of August to middle of September, it is good practice to go over the patch and pound the upright ones down. Harvesting should commence as soon as most of the necks have turned yellow and are considerably wilted. Do not delay harvesting simply because there may be some green tops when the main crop is ready. If left too long the bulbs are liable to make new roots, especially if the weather is damp, and the quality of the onion is injured.

Pull the onions by hand and deposit them in windrows containing the onions from two or three rows. If they are taken out with rakes they are apt to be bruised, and thus will not keep as well. The crop is left in the windrows until fully cured, which takes about ten days in good weather. During this time they should be topped with knives, cutting the tops off about half an inch from the bulb. On bright days the curing will be hastened by stirring with a wooden rake, being careful not to bruise the bulbs. If there is danger of a rainy season, the onions may be cured in open sheds or on the barn floor. After the crop is cured the bulbs should be sorted and properly stored. All weeds and refuse should be removed from the field, and, if possible, a fall crop grown.

Onions should be sold as soon as a fair price can be obtained, and not stored for the winter unless there is a very good chance of a rise. If you have an extra favorable season, they may be shipped right from the field, but it is generally advisable to empty them out in open sheds and pick them over again. All the small onions should be picked out and sold separately for pickling purposes.

It is not advisable for the inexperienced grower to try winter storing, of course. Unless thoroughly cured, many bulbs will sprout, while others with only a slight bruise will decay. There will be more or less shrinkage, and a large percentage of the onions will be lost if proper care is not given to ventilating and maintaining the desired temperature. However, it is desirable that growers should understand the conditions necessary to keep onions through the winter months, so that they may store part of their crop. I would not advise storing very many unless one has the facilities for doing so. It is essential that the bulbs should be well matured, thoroughly cured, not bruised, and in a perfectly dormant state for successful winter storing.

Onons may be wintered by two different processes—namely, by freezing the bulbs and keeping them in this condition all the winter, or by storing them in a dry apartment where the temperature can be maintained just above the freezing point. The former method is very satisfactory where the weather is cold during the entire winter. The onions are placed in a barn or outbuilding and allowed to freeze. They are then covered with hay, straw, or bags, and are allowed to remain in this condition all the winter. The covering should not be removed in the spring until the bulbs are entirely thawed out. The temperature should not run above thirty-two degrees or below fifteen degrees Fahrenheit. Successive freezing and thawing or severe freezing will injure the bulbs.

Lifting Rhubarb for Forcing

John Gall, Weston, Ont.

Most persons will admit that forced rhubarb in point of flavor surpasses that grown naturally. This is one of the resaons why it is so eagerly sought after. To obtain the earliest supplies the first batch of roots should be lifted as soon as the leaves of the past season's crop have died down. A sharp frost or a continuation of cold, damp weather will soon bring about this condition of plants of this subject.

If the roots on being lifted are left exposed to the open they usually start into growth better when placed in heat. The roots should be lifted so as to avoid damaging them more than can be helped. Large roots need to have a trench dug all round them, otherwise it is impossible to get well down under the roots, which is quite necessary if lifting is to be done properly. Rhubarb roots after forcing are not usually replanted.

The earliest batch of lifted roots should be placed in boxes, barrels, tubs, large pots, or any receptacle large enough to accommodate them, this enabling the grower to move them about from time to time. Fairly light soil should be placed about the roots. A suitable compost may be made up of leaf mould and good garden soil. As a matter of fact, any good soil will suit the purpose very well.

An excellent position for these receptacles is under the stage of a warm greenhouse, where the temperature can be maintained at from forty to forty-five degrees. By these means a supply of rhubarb may be had at Christmas. Warmth and darkness are essential factors in the successful forcing of rhubarb.

The lifted roots should be taken indoors from time to time in succession,

Prize Winning Vegetables Grown and Shown by E. A. Sanderson, Dauphin, Man.

Packing Fancy Tomatoes: M. O. Field & Sons, Grimsby, Ont.

so as to maintain a continuous supply of solid, crisp stalks. To ensure that the color may be good, and also that tough and weak growths may not be developed, the roots and soil should be maintained in a thoroughly moist condition by frequent applications of tepid water. I should like to emphasize the fact that it is a great mistake to water plants with ice-cold water just taken from the tap. Water which has to be used for watering plants, no matter what they may be, should be allowed to stand in the greenhouse tank over night.

Grading Vegetables for Market*

Paul Work, Cornell University, Ithaca, N. Y.

EVERY year sees the work of grading cutting a larger figure in the work of marketing vegetables than it did before. Grading was once unknown. To-day the producer of fruits and vegetables is following close upon the trail of the manufacturer who long ago realized the necessity of uniformity. The citrus people took the lead in this. The western apple shippers were next, with the vegetable shippers close upon their heels. The progressive market gardeners are now awake to the fact that two gnarled cucumbers cut the price of the whole bushel. Hundreds of growers are still asleep.

Every man and every community must make its own plan of grading. What suits one market does not suit another. Many are discouraged in setting the standard high because the lower grades are becoming increasingly difficult to sell . We had to discard a considerable proportion of the second grade tomatoes at Cornell during the past season, but it paid. At one time ordinary run-of-the-field fruit was bringing twenty-five cents a basket. Our primes sold at forty cents, and seconds at twenty and twenty-five cents.

Seconds are not wanted in large quantity on most markets. Many hold that the moral of this is, "Don't grade. If the consumer doesn't want seconds, make him take them with the best." But the true moral is, "Don't grow seconds." Of course, there will be some inferior fruit, but if by selecting a well bred strain of a good variety, and by giving the best of culture, we can reduce the seconds to very low proportions, we will not mind leaving a few culls in the field.

A COMMON MISTAKE

One of the most common mistakes in grading is in reducing the standards when the price drops. When markets are glutted, the question ceases to be one of securing a high price, but it becomes a question of moving the crop or letting it rot. People continue to use the product, and that in large quantities. They are willing to pay a price which will cover marketing cost and a good share of production, but the question is, which grower sells and which does not? Naturally, the one with the best sells. The following clipping, which is typical of a large number that appeared in our trade papers last season, furnishes good evidence on this point:

"Lettuce from State points has been in free receipt, and much has been sold for less than charges. Fancy, heavy-headed stock is worth fifty to seventy-five cents a bushel, but *average* grades neglected at ten to twenty-five cents a package."

The time of oversupply is the time when grading counts. The grower has established his trade on a basis of quality, and by maintaining that basis, he is able to hold on while the other fellow drops out. Moreover, Mr. Grader still holds the trade when the market picks up.

It is by no means easy to maintain a standard of grading. One naturally desires a maximum of primes and a minimum of seconds, and he even unconsciously tends downward. With hired help, the problem is much more difficult. The first essential is to form a mental image of the standard for each grade, working it out carefully and making it neither too high nor too low. Fix these standards as far as possible by the use of sizing boards and the like. Constant and rigid inspection is then necessary. If a large quantity is handled, each worker should have a number to be placed in each basket. Thus responsibility is fixed. Just here is one of the greatest advantages of machine-grading. A machine is free from the failing of human nature.

*Extract from an address delivered at the last annual convention of the Ontario Vegetable Growers' Association.

Mulching Ginseng

E. A. Russell, Brantford, Ont.

We have tried several methods of protecting the ginseng seed bed. A bed on which a half inch of sawdust was used gave the best results. In the beds on which leaves were used the seeds did not germinate so quickly and a number of plants were lost by being smothered or by the stems breaking because they were too long after growing through the leaves. In another bed the leaves were removed in April and the plants did well. The sawdust permits the air to get at the young plants as soon as they appear above the ground and the result is that the stem is stronger than when anything else is used. For older plants a mulch of leaves or rotted manure is suitable as the stem of the plant is strong enough to grow through without injury.

In the spring, when the plants appear, shade must be provided, which is usually done by erecting a lath screen. If this is delayed the plants may be injured and if they are left unprotected from the sun until June they will wither and die. During the growing season the only attention required is to keep the plants free from weeds and these will not be numerous on account of the mulch.

The Canadian Horticulturist

Published by The Horticultural Publishing Company, Limited

PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

1. The Canadian Horticulturist is published on the 25th day of the month preceding date of issue.
2. Subscription price in Canada and Great Britain, 60 cents a year: two years, $1.00. For United States and local subscriptions in Peterboro (not called for at the Post Office), 25 cents extra a year, including postage.
3. Remittances should be made by Post Office or Express Money Order, or Registered Letter. Postage Stamps accepted for amounts less than $1.00.
4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.
5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.
6. Advertising rates One Dollar an Inch. Copy received up to the 18th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.
7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,045
September, 1911	9,975
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911, 9,541

August, 1912..... 11,403

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed
THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

A MARKET TRANSFORMATION

Slowly at first but of late years more rapidly the control of the fruit markets of the world has been passing from the hands of the dealers into those of the growers. Ten years ago the grower was at the mercy of the buyer when the time came for him to market his crop. He had little or no authentic information concerning crop conditions throughout his own province, not to mention those of the world. Therefore he was compelled, unwillingly, to accept the statements of the buyers, who naturally always knew of large crops in some portion of the world that were certain to ensure low prices prevailing during the season to follow. In consequence, growers were forced year by year to accept unduly low prices for their products, and the fruit industry in general suffered therefrom. For the most part orchards were sold tree run, and little or no encouragement was given growers to produce a superior quality of fruit.

The transformation that has taken place in these conditions during the past ten years has been marvellous. The first sign of the change that was coming developed when the first cooperative apple growers' association was formed. One by one these came into existence in different parts of the country. Some lived for only a season or so, but for the most part they succeeded. Confidence in them increased as the years passed by and the benefits that accompanied their operations became evident.

Some six years ago in Ontario a provincial association was formed composed of representatives of the various local associations. This association gathered authentic information in regard to crop conditions and prices and posted its members accordingly. Thus they were no longer dependent upon the buyers, but instead were enabled largely to set their own prices.

Gradually the reports issued privately among the local associations by the provincial association were supplemented by reports issued by the various provincial departments of agriculture. These reports, published broadcast through the press, helped to keep growers posted in regard to crop conditions. Coincident with the publication of these reports, the Dominion Fruit Division commenced the publication of a national crop report, including a summary of crop conditions in other countries, that has helped materially to strengthen the hands of the growers. Across the border the Crop Reporter, issued by the United States Department of Agriculture, has served to reveal fruit conditions and prospects in that country. Still more recently the International Institute of Agriculture, representing all the leading nations of the world, has commenced the publication of regular international reports dealing with world-wide conditions. In consequence of these developments there is no reason to-day for any wide-awake fruit grower who desires to be informed in regard to crop conditions lacking information. Instead, it is a simple matter for him to be comparatively as well informed in regard to fruit conditions as any buyer.

Another and almost equally important development is now being effected. For a while after the opening of the great western fruit market local associations were largely dependent for their information concerning it upon reports furnished by such representatives as they might send to the consuming centres of the west. Three years ago the British Columbia Provincial Government appointed a market commissioner to visit these markets and report weekly the conditions there existing for the benefit of the growers of that province. This year the Ontario Government has followed the example thus set. In this way the position of the growers is being still further strengthened.

As a result of all these changes the prices obtained by fruit growers for their crops have been steadily advancing, especially in the case of those growers who are members of cooperative associations. To-day the old system under which the buyers dealt with the individual growers has almost completely disappeared in many portions of Ontario, Nova Scotia and British Columbia. Instead the buyers deal direct with the associations, sometimes purchasing from twenty to forty thousand barrels of graded fruit from an individual association.

All that has thus been accomplished is but preliminary to further changes still to come. The better returns they are receiving for their fruit are encouraging the growers to produce fruit of a higher quality and to adopt more modern styles of packages. Box packing is becoming more and more general. The pre-cooling of fruit, with all it will mean, is now within sight. A new spirit of optimism and confidence is evident among the growers in all the fruit districts of the Dominion. This new spirit is the most encouraging augury we have of the further improvements and successes the future holds in store for us.

A POWER IN PUBLICITY

Few horticultural societies realize what assistance they might gain for the work they are doing were they to make greater use of the reading columns of their local papers. The two most successful horticultural societies in Ontario are those located in St. Catherines and Ottawa. The president of the former is the editor of one of the local papers. Through his efforts such publicity has been given to the work of the society the whole city has been interested in its accomplishments. In Ottawa all the city papers have, time and again, liberally assisted the local society. In some instances full page descriptions of the work it was doing have been published. Thus thousands of people have been interested in the society, who otherwise might never have heard of it.

The average editor is a busy man. Many are not directly interested in horticulture. Therefore they do not appreciate its importance or give to it the attention that they otherwise would. This has led many societies to conclude that their local papers are not interested in this work, and that they will not give the publicity that they should to horticultural affairs. Some societies claim to have sent their local papers reports which have been suppressed or so emasculated as to be of little value.

In nine cases out of ten the first conclusion is not well founded, and an explanation may be found for the abbreviated reports. The officers of societies often do not know how to write their reports in an interesting manner. Their reports, therefore, do not appeal to the editor nor to the public. When, however, a society discovers how to describe its doings in an interesting manner it will be found almost invariably

that the local papers will be glad to give such reports publicity. The success the Hamilton Horticultural society is meeting with this year in the publication of descriptions of local gardens demonstrates this fact.

Once a society recognizes that the value of its work can be greatly augmented by interesting the public in its doings through the reading columns of its local papers and then undertakes to supply its papers with short and newsy reports of its proceedings, it can depend upon obtaining an increase in its power and influence.

Year by year our record of the causes which have led to the success or failure of different cooperative fruit growers' associations increases in value. It demonstrates what has long been realized by our leading growers that the principle of cooperation is sound. Failure results only where the principle is not properly applied. More and more it becomes evident that the chief corner stone of every successful cooperative association is its manager. Where other conditions are reasonably favorable a cooperative association that has a good manager and values him at his true worth is assured of almost certain success.

Standardizing Canadian Fruit Packages

(Continued from page 206)

It would appear that it might be possible to make the outside dimensions of the apple box the standard for two outside dimensions for the package for crab-apples, pears, peaches and for the four-basket crate used in plums, cherries and tomatoes. It is possible, too, that these same outside dimensions might be used for the small fruit box crate for shipping raspberries, strawberries, currants and similar fruit. Grapes are apparently quite satisfactorily shipped in the six-quart basket.

BOX VS. BARREL

A few words may not be out of place with reference to the box vs. the barrel. Many fruit growers are impressed with the idea that the box will supplant the barrel. I cannot think that this will be the case. The barrel is an eminently cheap and convenient package, possessing many advantages over the box and, of course, some disadvantages, but upon the whole it would appear that the sentiment divides itself along two lines:

First: Those who want the poorer grade of fruit prefer, almost universally, the barrel.

Second: Those who deal exclusively in the higher grades must have the box.

Then again there are those who for purely sentimental reasons prefer the box or the barrel, as the case may be. I have two letters before me from merchants in the north-west, one asking for well packed barrel fruit and the other denouncing the barrel as an altogether unsuitable package and insisting upon the box only. Both of these dealers probably have good and sufficient reasons for their preference. It, therefore, cannot be said that either the barrel or the box is the best package. Each has a place to fill, and the discretion of the packer must be used in deciding which is the proper package for his purpose, the box or the barrel.

In the trial shipments of peaches, made by the Dairy Commissioner's Branch in 1910, a package was used, eighteen inches long, eleven inches wide and three and a half inches deep. This package was designed to contain only one row of very fancy peaches, wrapped in paper and packed in wood wool. The package served the purpose admirably, and there seems no reason why for certain markets the depth of the package could not be increased so as to take in two layers, and correspond in two dimensions with all other box packages.

It may be noted that the great bulk of the Pacific Coast apples are shipped in what is known as the Oregon standard box, ten and a half by eleven and a half by eighteen inches.

With these dimensions before us, it would seem that there is a possibility of standardizing all our boxes and crate packages at least in two dimensions, and thus meet the needs fairly well of those who wish to ship mixed cars and, at the same time, make a convenient package for all purposes.

British Columbia Packages

Bulletin number forty-five of the British Columbia Department of Agriculture publishes the following as the packages used by British Columbia fruit growers:—

	Size of Box, etc., Inches	Average Weights (Net)	Remarks
	(Inside measurements)		
Apples	10 x 11 x 20	...41 lbs.	
Crab-apples	10 x 11 x 20 (apple)	...50 lbs.	The half apple box is also used on Lower Mainland.
	18¼ x 11 x 8½ (pear)	...40 lbs.	As used in Upper Country; half pear-box and peach-box (20 lbs.) also sometimes used
Pears	18¼ x 11 x 8½	...46-48 lbs.	
Peaches	18¼ x 11¾ x 4	...17-21 lbs.	
	18¼ x 11¾ x 4¼		
	18¼ x 11¾ x 4½		
Plums	15¾ x 15¾ x 4¼	...20-22 lbs.	4-basket crate
Prunes		...20-25 lbs.	Shipped largely in peach-boxes
Apricots	15¾ x 15¾ x 4¼	...19-20 lbs.	4-basket crate
Cherries	18½ x 9 x 2¼	...8½-9 lbs.	Sour cherries (4-basket crate) equals 16-18 lbs. Sour cherries (special pack) equals 24 lbs.
Raspberries	2-5 quart carton (24 to 1 crate). Size of carton, 5¼ x 5¼ x 1	...14 lbs.	Size of crate, 16¾ x 23¼ x 5¼
Strawberries	4-5 quart carton (24 to 1 crate). Size of carton, 5⅞ x 5¼ x 8	...24 lbs.	Size of crate, 16¾ x 23¼ x 6¾
Loganberries	2-5 quart carton (24 to 1 crate)	...16 lbs.	As for strawberries
Currants			
Grapes	6 quart basket (approximately)		Six 6-quart baskets reckoned as 100 lbs. by the Express Co.
Rhubarb	20 x 15¾ x 7¾	...40 lbs.	
Cantaloupes	12 x 11½ x 20¼		
Tomatoes	18¼ x 11¾ x 5	...23 lbs.	
Cabbage	25 x 23 x 18		
Lettuce	28¼ x 16 x 12		

Simply Immense

"We might add that we have never received such results from advertising as we have had from The Canadian Horticulturist this year. It is simply immense. We are getting enquiries and orders from Prince Edward Island, Nova Scotia, New Brunswick, Quebec and Ontario. It only goes to show that The Canadian Horticulturist is the right journal in which to advertise to reach the fruit growers."
—J. J. Roblin & Son, Brighton, Ont.

The foregoing is a portion of a letter received recently from one of our advertisers. It speaks for itself. As this firm is advertising box and barrel presses, articles which are used only by commercial fruit growers, men who grow and pack large quantities of fruit for shipment, their experience goes to show the extensive circulation which The Canadian Horticulturist has among this desirable class of readers. These are people who make good money, who live in good homes, and who are good prospective buyers of every kind of high-class goods for their fruit farms, for their homes, or for the improvement of their homes and home surroundings. They are people who can and do afford the luxuries as well as the necessities of life.

Note also the extensive territory over which the buying power of The Canadian Horticulturist is distributed as evidenced by the fact that orders were received from almost all parts of Canada. The Canadian Horticulturist offers to its advertisers a select class of buying power, picking out, as it were just the class of people who are likely to prove good buyers for any class of advertised goods.

"INTERNATIONAL FLY WAY"
Prevents the Tremendous Loss from Flies

Flies cost the Farmers of Canada millions of dollars annually by retarding the growth or fattening of animals and by greatly reducing the production of milk by constantly annoying the animals all summer. Every farmer or stockraiser knows this statement to be true from his own experience.

Flies also cause a great loss of life by Spreading Diseases from farm to farm. "International Fly Way" will keep flies off your animals and give them perfect rest from these pestiferous insects, which will make you more money in a larger production of milk or much quicker growth of all animals.

SAVE YOUR STOCK
By Using
"INTERNATIONAL FLY WAY"

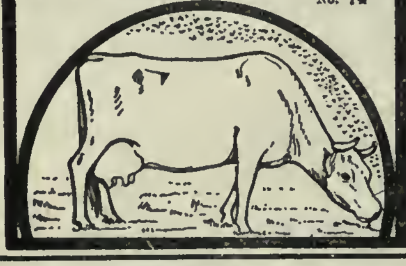
It is positively guaranteed to be effective in Driving Away Flies, Mosquitos, and other insects which worry stock and reduce their earning capacity. It is harmless to the hair and skin and will be found perfectly satisfactory when used according to directions.

We place our twenty years of reputation back of "International Fly Way," and ask you to test it on our positive guarantee.

For Sale at All Dealers.

INTERNATIONAL STOCK FOOD CO. Limited, TORONTO

No. 74



Standard Packs of Apples

THE following table, as taken from circular number eight, issued by the British Columbia Department of Agriculture, gives complete information on the make-up of almost all the most common packs of apples. This table, with the information contained in the article by Mr. R. M. Winslow, published in the front pages of this issue, should prove a valuable guide to beginners in apple packing and even to experts, and is well worth preserving for reference purposes.

No of Apples in Box	Type of Pack	Tier Designation	Actual Tiers	Position of Apples	Apples in Top Tier	Size of Apples
36	Diagonal, 2–1	3 tier	3	Side	2, 1–4, 4 equals 12	Very large 3¾ in. and up
41	Diagonal, 2–1	3 tier	3	Side	2, 1–4, 5 equals 14	Very large 3¾ in. and up
45	Diagonal, 2–1	3 tier	3	Side	2, 1–5, 5 equals 15	Very large 3¾ in. and up
45	Straight 3	3 tier	3	Side	3, 5 equals 15	Very large 3¾ in. and up
51	Straight 3	3 tier	3	Side	3, 6 equals 18	Large 3½ in.
56	Diagonal, 2–2	3½ tier	4	End, usually	2, 2–3, 4 equals 14	Large 3½ in.
61	Diagonal, 2–2	3½ tier	4	End, usually	2, 2–4, 4 equals 16	Large 3¼ in.
72	Diagonal, 2–2	3½ tier	4	End, usually	2, 2–4, 5 equals 18	Large 3¼ in.
80	Diagonal, 2–2	3½ tier	4	End, usually	2, —5, 5 equals 20	Large 3¼ in.
88	Diagonal, 2–2	3½ tier	4	End, usually	2, 2–5, 6 equals 22	Large 3 in.
96	Diagonal, 2–2	4 tier	4	Side	2, 2–6, 6 equals 24	Medium to large
104	Diagonal, 2–2	4 tier	4	Side	2, 2–6, 7 equals 26	Medium to large
112	Diagonal, 2–2	4 tier	4	Side	2, 2–7, 7 equals 28	Medium to large
120	Diagonal, 2–2	4 tier	4	Side	2, 2–7, 8 equals 30	Medium to large
128	Diagonal, 2–2	4 tier	4	Side	2, 2–8, 8 equals 32	Medium to large
113	Diagonal, 2–3	4 tier	5	End	2, 3–4, 5 equals 23	Medium
125	Diagonal, 2–3	4 tier	5	End	2, 3–5, 5 equals 25	Medium
138	Diagonal, 2–3	4½ tier	5	End	2, 3–5, 6 equals 28	Medium
150	Diagonal, 2–3	4½ tier	5	End	2, 3–6, 6 equals 30	Medium
163	Diagonal, 2–3	4½ tier	5	End	2, 3–6, 7 equals 33	Medium to small
175	Diagonal, 2–3	4½ tier	5	End	2, 3–7, 7 equals 35	Small
188	Diagonal, 2–3	5 tier	5	End	2, 3–7, 8 equals 38	Small
200	Diagonal, 2–3	5 tier	5	End	2, 3–8, 8 equals 40	Very small
213	Diagonal, 2–3	5 tier	5	End	2, 3–8, 9 equals 43	Very small
225	Diagonal, 2–3	5 tier	5	End	2, 3–9, 9 equals 45	Too small

Elm Leads in Cooperage

Although elm still leads among the woods used for slack cooperage, spruce is rapidly supplanting it. In the total output of barrels in the Dominion last year, there were used, according to figures compiled by the Forestry Branch of the Department of the Interior, 80,016,000 pieces of elm, in staves, headings and hoops, as against 37,704,000 pieces of spruce. There were, however, over 11,000,000 more spruce staves and 9,000,000 fewer elm staves reported for 1911 than for 1910. In time, elm will probably be used only for hoops, as it is the best wood for the purpose, the supply is fast diminishing, and other species can be used to advantage for staves and headings. The ultimate substi-

Apple Trees

We are producing hardy varieties of Apples and other fruits for the North. Our Nurseries at Pointe Claire, extending over 170 acres, are devoted to the growing of Hardy Fruit Stocks and Ornamentals, Roses, etc., etc. Our Apple Trees are **budded** on whole roots and grown under all the rigorous climatic conditions of this section. For this reason they are pronounced by experts to be best suited as stock for Northern planters, both in the Garden and Orchard.

Intending customers are urged to place their orders **now** while we have a full selection of the best standard varieties.

Catalogues and Lists cheerfully furnished
Free of Charge

Canadian Nursery Co., Ltd.
(Charles K. Baillie, General Manager)
10 Phillips Place - Montreal, P. Q.

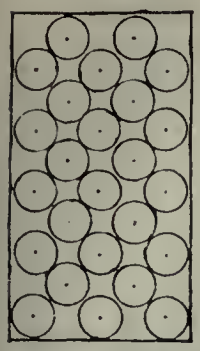
Apple Boxes

WE make a good box at the right price. It is especially suited for the apple grower and shipper.

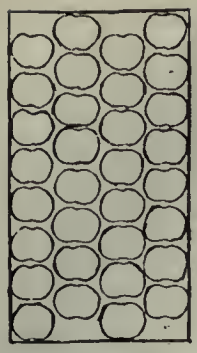
One of our large customers last year used thousands of our boxes for the export trade. Such trade demands a strong, durable box. Our boxes gave every satisfaction.

Our Boxes are Right.
The Price is Right.
Let Us Quote You.

Barchard & Company, Limited
135-151 Duke St. TORONTO



A Two-Three, Five-Five Pack. One hundred and twenty-five apples.



A Two-Two, Eight Eight Pack. One hundred and twenty-eight apples

tuto for elm will probably be birch, which is comparatively plentiful.

Slack cooperage is of vastly greater importance than tight cooperage in Canada. This because the majority of Canadian products are of a rough and dry nature, such as lime, potatoes, apples, dry fish, flour, and cerals, and because Canadian woods are best suited to slack cooperage.

White oak, the only wood which can be used for containers of alcholic liquids, has been practically exhausted in Canadian woodlands. In 1911 only 2,768,000 oak staves were cut, while 7,293,000 were imported.

A rough estimate on the part of the Forestry Branch places the minimum amount of material used in the manufacture of all classes of cooperage as 62,353,190 board feet made up as follows: staves, 29,367,714 feet, heading, 24,466,666 feet, and hoops, 62,353, 190 feet.

Selling Associations Needed

A. McNeil, Chief, Dominion Fruit Division, Ottawa

The necessity of organization among all classes of fruit dealers could not be better illustrated than by an incident that occurred in the Toronto market July 8th. Strawberries were particularly scarce this year; that alone would have justified a high price. A further consideration in connection with the price is that the canners were buying all the strawberries that were offered. The Toronto market felt the consequence of these conditions and strawberries for the first week in July ruled very high, so high indeed, that it was suspected that Toronto fruit firms had formed a combination for the purpose of "boosting" prices.

The growers at Clarkson, and other points in the strawberry district noted the high prices in Toronto, and as there was no organization a large number of them shipped independently to Toronto for Saturday's market. The result was that the commission merchants found themselves literally buried under strawberries. Had it been the first of the week, perhaps something could have been done with the berries, but being Saturday large consumers could not use them, and fruit that would quite readily command twelve or fourteen cents a box, was offered at eight and nine cents a box, and a large quantity of it was not sold at all. Had the strawberry growers been organized, even at Clarkson, this condition could not have prevailed.

The losses on strawberries for this one day would pay the expenses of a selling organization for the season.

There would have been some compensation if the consumers had benefitted from this lowering of prices. As a matter of

Douglas Gardens

Oakville, Ontario

The best time to plant Pæonies, German Irises, Japanese Irises, Delphiniums and Phloxes, is in the early fall. The best time to give an order for these is **NOW.**

We offer 67 varieties of **Pæonies** at prices from 30 cts. to $3 per plant;

12 varieties of **Irises** at 15 cts. to 25 cts. per plant;

Delphiniums, (Larkspurs), Gold Medal Hybrids, a choice mixture, at 15 cts. per plant;

And 6 varieties of **Phloxes** at 15 cts to 20 cts. per plant.

("Miss Lingard" Phlox at 20 cts. should be in every garden.)

Daffodils must be planted in early fall. We offer 8 fine sorts at prices 2 cts. to 5 cts. each.

Our Fall Planting List, now ready for distribution, describes all of the above. Send name and address for a copy.

JOHN CAVERS

Darr Farm, Niagara-on-the-Lake.

August 1st, 1911

"Regarding the large block of Pedigreed Cherries, Peaches, Pears, Plums and bush fruits we planted last fall, am pleased to tell you the results are in every way satisfactory. The few trees put in this spring do not compare with the fall plant, either in growth or take. We lost considerably more of the spring planted trees, and the growth is much shorter. In future we plant in the fall.

D. A. RODGERS

PEDIGREED CHERRIES, planted November 1910, 99 per cent. thrifty July, 1911.
The property of D. A. R. ROGERS, Darr Farm, Niagara

We strongly recommend the fall planting of all fruits excepting yearling plums, which are inclined to freeze back, and should be planted in the spring. Where the land is suitable and the work well done, fall planting has in every case proved more satisfactory than spring planting. Particularly is this noticeable this dry season. The land is usually in fine planting condition in the fall, the trees quite dormant, the weather cool, and more time can be given to plant carefully. Fall planted trees are well established by spring, and make a much heavier growth than spring planted orchards. These are a few reasons why fall planting pays.

Orders should be sent in early, and we are prepared to make quick delivery as soon as stock is thoroughly matured.

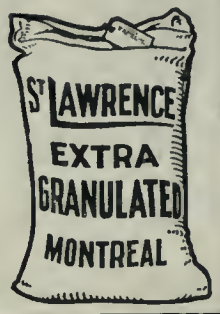
Auburn Nurseries, Ltd., Queenston, Ont.

Try it—test it—see for yourself — that "St. Lawrence Granulated" is as choice a sugar as money can buy.

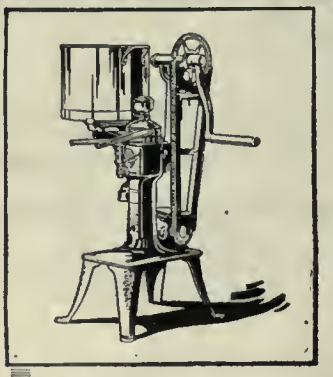
Get a 100 pound bag—or even a 20 pound bag—and compare "St. Lawrence" with any other high-grade granulated sugar.

Note the pure white color of "St. Lawrence"—its uniform grain—its diamond-like sparkle—its matchless sweetness. These are the signs of quality.

And Prof. Hersey's analysis is the proof of purity —"99 99/100 to 100% of pure cane sugar with no impurities whatever". Insist on having "ST. LAWRENCE GRANULATED" at your grocer's.



ST. LAWRENCE SUGAR REFINERIES LIMITED, MONTREAL. 66A



I H C Cream Separators Have Trouble-Proof Neck Bearings

GRANTING that a cream separator is a money making necessity on every farm where three or more cows are kept, there are two points to make sure of when you purchase your machine — close skimming and long life.

There is very little skimming difference between separators when new but there is a tremendous difference in the length of service they will give. The difference is due to design and mechanical construction. To take one example of mechanical efficiency

I H C Cream Separators Dairymaid and Bluebell

have trouble proof, self aligning, bowl spindle bearings. The bowl spindle bearing or neck bearing is an extremely important part of the separator mechanism. Its business is to reduce to the lowest possible point the vibration of a heavy bowl whirling at the rate of 6,000 or more revolutions per minute. A rigid bearing in such a place is impossible. To make a flexible bearing capable of withstanding the terrific strain requires the most accurate balance of strength, firmness, and elasticity. In I H C cream separators this balance is acquired by the use of one spring. There is only one wearing part, a phosphor bronze bushing. The entire bearing is protected from dirt or milk by steel cases. There is but one adjustment and that easy to make.

Go to the I H C local agent who handles these machines and ask him to show you how successfully this bearing meets all the difficulties imposed upon it. He will also show you many other reasons why I H C cream separators, made in four sizes, are the best. Get catalogues and full information from him, or write the nearest branch house.

CANADIAN BRANCH HOUSES

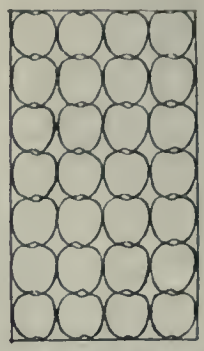
INTERNATIONAL HARVESTER COMPANY OF AMERICA

(Incorporated)

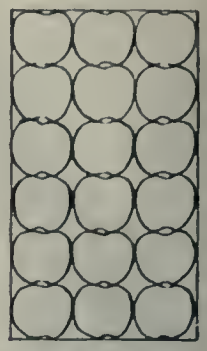
At Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, N. Battleford, Ottawa, Quebec, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton

I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A



Three Tier, Eight Long



Four Tier, Eight Long

fact the consumers got little or no benefit from it. Some of the retailers secured a slight advantage, but there was a large loss that benefitted nobody. A co-operative Selling Association would have given the consumers cheaper berries in a more satisfactory condition and the growers would have much better net returns.

Wrapping Fruit

R. M. Winslow, Victoria, B.C.

In the fruit-packing, grading and marking there is continual progress. Almost all number one British Columbia apples are now wrapped. It is to be hoped that small independent shippers, as well as the large associations, will see the advantage of this practice, so that this season all our best fruit will go to the markets wrapped in paper.

The advantages of wrapping are as follows:—

One, wrapping gives a more finished appearance to the package. It presumes a high-grade article, so finding a readier sale and a steady market and a higher price:

Two, wrapping improves the keeping quality, preventing disease spreading from fruit to fruit:

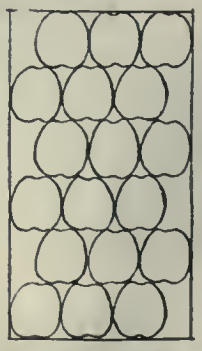
Three, the paper serves as a cushion, preventing bruising, and so prolonging the life and improving the appearance:

Four, wrapping makes an elastic but firm pack, much less liable to shift, and much quicker to put up:

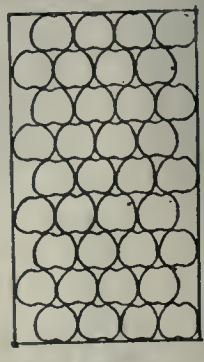
Five, it protects the fruit from changes in temperature and absorbs surplus moisture.

The cost of paper for wrapping is almost saved by the weight of fruit which the paper displaces. Experienced packers do as quick or quicker work wrapping than without it. There is very little foundation for any objection to wrapping, save that there is quite a knack in it, which some packers seem unable to grasp.

The wrapping-paper most largely used



Four Tier, Nine Long
One hundred and forty-four apples



Three Tier, Six Lo
Fifty-four apples

Men's Residence

The

Ontario Agricultural College

Guelph - Ontario

The College Year begins September 18th, ends April 15th, 1913, allowing farmers' sons to return to the farm during the summer months.

Courses { **Two Years' Course for practical farmers, leading to Associate Diploma.**
Four Years' Course, leading to the degree of B.S.A., conferred by Toronto University.

Write for Application Blanks and the College Calendar, which gives information in detail

G. C. CREELMAN, B.S.A., L.L.D., President

Quick and Easy

That is the way the DAISY APPLE BOX PRESS works. A simple pressure of the foot brings the arms up over the ends of the box, automatically draws them down and holds them in place while being nailed. The fastest and only automatic press on the market.

Pat. No. 104,535

If you pack apples in boxes, this machine will be a great convenience to you and will save you time and money. Write for prices to

J. J. ROBLIN & SON

Manufacturers **Brighton, Ontario**

See our exhibit of Presses with the Canada Rex Spray Co., at the Canadian National Exhibition.

Are You Setting Out Your Trees as Economically as Possible and are the Trees when Planted Giving The Best Results Obtainable ?

Let Us Send You FREE OF CHARGE our Pamphlets on the use of

STUMPING POWDERS

USED FOR

Planting Trees
Cultivating and Rejuvenating Orchards
Breaking Hard Pan, Shale and Clay Sub-Soils
Removing Stumps and Boulders
Digging Wells and Ditches, Etc., Etc.

Write us in regard to arranging
FREE DEMONSTRATION

CANADIAN EXPLOSIVES, Limited

MONTREAL, P. Q.

To Protect the Beauty That is Yours

and to enchance it, if that be possible, is a duty none the less binding because it has been made so agreeable. That duty centres in Beauty's chief expression, the skin.

With intelligent care and the regular use of such perfect preparations as Na-Dru-Co Ruby Rose Cold Cream and Witch Hazel Cream, you can preserve its bloom in spite of exposure to burning sun or dry, dusty, scorching winds.

NA-DRU-CO
Ruby Rose Cold Cream

does much more than keep the outer skin soft and supple—it feeds the underlying tissues, fills out the tiny hollows, prevents wrinkles, and gives a fresh and wholesome charm. With its subtle odor of fresh roses, and the soothing sensation which it imparts, Ruby Rose Cold Cream is a toilet gem.

In opal glass jars, 25c. at your druggist's.

NA-DRU-CO
Witch Hazel Cream

is a refined and altogether delightful preparation of Nature's own cooling, healing specific, Witch Hazel. Under its soothing influence roughness, chaps, sore lips, sunburn, windburn or irritation after shaving vanish like magic. Used freely after washing it keeps the hands and face soft and comfortable.

25c. a bottle, at your Druggist's.

Always look for the Na-Dru-Co Trade Mark when you buy.

National Drug and Chemical Co. of Canada, Limited. 189

Sprayers
Sulfur Dusters

For Fighting Every Disease of Cultivated Plants

Knapsack, Pack Saddle or Horse Drawn Power Sprayers

Send for Catalogues and particulars to: VERMOREL (Rhone), FRANCE Manufacturer, VILLEFRANCHE

in this province is styled the "Duplex," so called because it is calendered on one side and rough on the other, the latter being turned to the fruit. Yellow papers are not in favor with the trade.

When apples are not wrapped it is best to use lining-paper for the boxes. The brand used in the province is termed "White News," and sells for four and a half cents a pound in Vancouver. The sheets are cut to size twenty by twenty-six inches, two being used to each box. A pound contains twenty-five sheets. Layer-paper is used only for exhibition fruit and that intended for shipment to Great Britain.

METHOD OF WRAPPING.

The details of the method adopted by packers vary, and it is impossible to describe the details of any particular method on paper. The general system which all use is as follows:—

The right-handed packer stands with his right side to the packing-table, picks up the paper with the left hand, the apple with his right. He places or drops the apple into the paper, the side or end which is to be packed uppermost being placed downwards on the paper in the palm of the left hand. The fingers of both hands are used to make the wrap in the fewest possible motions, and the apple is placed in the box with the left hand.

THE PACKING-TABLE.

Packing on a bench instead of on tables is gaining in favor in some districts. This system was used in the Summerland and Penticton packing-schools last year. The operator stands in front of a sloping bench, on which are placed five-boxes, with an orchard box of fruit at his right hand. The packer picks up the apple nearest to hand; if it will fit into any of the five boxes before him he wraps it as he puts it in its place. If over or under size, it goes into one or two boxes placed conveniently near, and if a cull, is run down to a box on the floor. This system is of advantage with skilful packers, who can tell at a glance what packs will be most useful for the fruit in the orchard boxes. The bench is quickly and cheaply constructed, the fruit receives a minimum of handling, and consequently of bruising. Experienced packers have widely different opinions on the relative methods of these two systems. For the beginner and for poorly graded fruit the table is preferable.

Items of Interest

Owing to the fact that the Dominion Exhibition will be held at Ottawa this year, the horticultural prize list has been considerably augmented. Over 100 prizes are offered for apples alone, some being as high as twelve dollars. One hundred prizes are offered also for garden vegetables. The fair will last from September 5 to 16. The secretary is E. McMahon, Ottawa.

Members of the Ottawa branch of the Ontario Vegetable Growers' Association have been holding meetings this season in one another's gardens with marked success. A visit has also been paid to the Experimental Farm. Prizes are being offered for field crop competitions in tomatoes, cauliflower, cabbage, celery, seeded onions, transplanted onions and melons. Special prizes are being offered also for competition at the Central Canada Exhibition in September, and at the Aylmer, Quebec, Exhibition. The prizes in the field crop competition range from ten to twenty-five dollars each.

Gerhard Heintzman Pianos
Pianos of Prestige

Piano Tone Quality

There is a certain "indefinable something" about the tone of a

Gerhard Heintzman Piano

that places it on a pedestal as Canada's Greatest Piano. This is not the result of accident but honest endeavor applied by experts through the past fifty years.

If you have in mind the purchase of a GRAND, SELF-PLAYER, or UPRIGHT PIANO, it will be to your interest to see and hear the

GERHARD HEINTZMAN

at the Industrial Exhibition (south side in Manufacturers' Building) where a special display of exclusive designs is on exhibition, or in the salesrooms of the NEW GERHARD HEINTZMAN BUILDING, 41-43 Queen Street West, opposite City Hall, where a duplicate of the Exhibition designs is also on view.

Your present piano will be taken as part payment and liberal terms arranged for paying the balance.

Gerhard Heintzman, Ltd.
City Hall Square, Toronto

BULBS AT SPECIAL PRICES

I have Imported direct from the Growers A LARGE QUANTITY OF EXTRA CHOICE BULBS for House and Garden Culture. Extra Good Named Varieties for Bedding. It will pay you to get my prices. Write at once.

C. MORTIMER BEZZO, Bulb Importer, BERLIN, CANADA

Cold Storage Fruit Warehouse

Finest Apple Rooms in the Dominion for
EXPORT AND LOCAL TRADE
Special Rooms for All Kinds of Perishable Goods

THE CANADA COLD STORAGE CO.
LIMITED
53 WILLIAM STREET, MONTREAL

Send your consignments of APPLES to the Home Country to

Ridley Houlding & Co.
COVENT GARDEN
LONDON, ENGLAND

who specialize in APPLES and PEARS during the Season. Personal attention, prompt account sales and remittance

Correspondence invited

Buy Certainty With Your Wagon

THERE is no longer any need to speculate in wagons. Before you buy a wagon you can be sure of the quality of wood in hubs, spokes, felloes, axles, bolsters, stakes, and boxes; of the weight and quality of metal in tires, skeins and ironing. I H C wagons

Petrolia **Chatham**

are the easiest running, longest lasting wagons you can buy because the lumber used is carefully selected—first grade oak and hickory for wheels, the finest yellow or bay poplar for box sides, and the very best long-leaf yellow pine for box bottoms—all free from shakes, checks or other defects which would interfere with their giving the best service.

The construction of I H C wagons is worthy of the good material used. The air-dried lumber is machined swiftly by accurate, automatic machines, doing the work uniformly well and at a cost away below that of turning out wagon parts by old fashioned methods. The saving thus made is returned to you in better quality of material. All joints fit snugly. Skeins are paired, assuring easy running. All ironing and other metal parts are extra thick and strong.

Go to the I H C local agent who handles these wagons and ask him to prove our claims. Remember, that our responsibility does not cease when the sale is made. You are the person who must be satisfied.

The I H C local agent will show you the kind best suited to your needs. See him for literature and full information or write the nearest branch house.

EASTERN CANADIAN BRANCHES
INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)

At Hamilton, Ont. Ottawa, Ont. London, Ont. Quebec, P. Q. Montreal, P. Q. St. John, N. B.

I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizers, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A

Market Prospects

The conditions of the markets, so far as Canadian apples are concerned, are fairly re-assuring. The apple crop in Europe is universally short, and this shortage, though it may be in countries such as Austria-Hungary, Switzerland and Italy, to which Canadian apples are not exported, has a direct influence upon the export price of Canadian apples. Germany imports an average of 3,000,000 barrels of apples from the surrounding continental countries annually. The imports from Canada and the United States so far have not been large, but there seems no reason why there should not be a splendid opening this year in Germany and probably in other countries on the continent. The prospect for improved transportation from Canada direct to Germany is good. If the proper commercial connections can be made at once, there would seem to be a possibility of making up by exports from Canada the shortage that Germany will have in her imports from Continental Europe. France may be expected to take fairly large quantities of late winter varieties. Russets and Ben Davis have been favorities for this trade in the past.

The British markets offer more than ordinary attractions this year. There is a general shortage of fruit. The industrial conditions, while not without disturbing elements, are not such as to discourage generous buying on the part of the English wholesale merchants.

Some uncertainty surrounds the conditions of the United States apple crop. It is only an average crop in any particular locality, but this average crop is so widely distributed that many large markets will be supplied locally with the great bulk of fruit required. The class of fruit that most concerns the Canadian grower is the supply of winter apples or the quantity that will go into cold storage that may come into consumption during the months of December, January, February and March. This grade of fruit is not abnormally large in the United States this year and, if good industrial conditions continue to exist, the greater part of this will be absorbed by the home market at fair prices. Nevertheless, should there be a special demand from European markets, a large portion of this fruit would be immediately available to meet it.

The prospects, therefore, would seem to be for a fair to medium demand in Great Britain for fall and early winter fruit, and perhaps a somewhat better market for winter fruit. Should Canadian apples, suitable for late winter shipments, pass into strong hands prices may rule fairly high in Great Britain.

One of the disturbing elements in the Canadian apple market is the large crop of the American Pacific States. These apples compete at a disadvantage in the English market, but are practically on even terms in the North-West markets. It is possible, therefore, that the North-West will receive this year a large quantity of imported apples. It is possible, too, that the British Columbia shippers, having their first large crop for export, may not be so well organized as to meet with advantage the competition of the American growers.—Bulletin, Dominion Fruit Division, Ottawa.

I think very highly of THE CANADIAN HORTICULTURIST, and find it a great help to me in my work as a fruit grower. I have thirty acres in orchard.—A. J. Turner, Berwick, N. S.

We Want All Fruit Growers

Rex

Who are at TORONTO FAIR—August 26th to September 9th, 1912—to visit our Exhibit, where we will be "at home" to our friends, in a Tent, west of Transportation Building, (western part of grounds.) We will exhibit

"REX" LIME AND SULPHUR SOLUTION
"REX" ARSENATE OF LEAD
POWER SPRAY PUMPS, IN VARIOUS SIZES
HAND SPRAY PUMPS, IN VARIOUS SIZES
BARREL AND BOX PRESSES, AND ORCHARD SUPPLIES

"COME AND SEE US." *Agents Wanted where not already represented.*

CANADA REX SPRAY CO., Limited : : BRIGHTON, ONT.

Visitors to the Toronto Exhibition

Should make at once for the east wing of the Horticultural Building; we cordially invite you to pay an extended visit to our display of Canadian products of

Carter's Tested Seeds

In any case we desire your address for catalogues, and even if you intend favouring us with a call we ask you to send us a post card now for illustrated literature regarding the products of the House of Carter.

Patterson, Wylde & Co.
65 Front Street East, Toronto
(And at Boston, Mass.)
Sole Canadian Agents for James Carter & Co.
London, England
Seed Growers by Appointment to H. M. King George V.

"Entirely Satisfied"

This is the report which we are receiving from our customers all over the country.

FRUIT GROWERS
GARDENERS
FLORISTS
FARMERS

are all "entirely satisfied" with the results which they are receiving from the use of

HARAB
ANIMAL
FERTILIZERS
Grow Bigger Crops

MADE IN CANADA
BY
THE HARRIS ABATTOIR CO., LIMITED
TORONTO FERTILIZER DEPT. **ONTARIO**

DON'T FAIL TO LOOK US UP ON THE EXHIBITION GROUNDS

APPLES WANTED

and FRUITS OF ALL KINDS

CONSIGNMENT OR F. O. B.

GEO. VIPOND & CO. - MONTREAL

BRANCHES: WINNIPEG REGINA OTTAWA

MAXWELL'S

JEWEL FOOD-CUTTER

is a daily necessity in every home.

You are always cutting up meats and vegetables for stews, etc.

A knife is awkward and dangerous—a chopping bowl is cumbersome.

"MAXWELL'S JEWEL" cuts everything as you wish—fine, medium or coarse because it has five cutting plates.

Easily cleaned—easily worked—very strong, durable and handsomely finished.

Insist on your dealer supplying the "Jewel" because this is the only food cutter made in Canada—and is superior to anything imported.

DAVID MAXWELL & SONS, 133

ST. MARYS, ONT.

SPECIAL NO. 26 Sent to your Express Office carefully packed, for **$5.00**

8 BEAUTIFUL HOUSE PLANTS

AND

100 Choice Winter Flowering Bulbs

All for $5.00

We stake our reputation on this Special Bargain. The most careful buyer cannot select better quality or get more for the money. The plants are all thrifty and healthy; of full blooming size, and such only as will do well in the ordinary home atmosphere. The bulbs are those that are sure to bloom and thrive and give delight to the inmates of the home all through the long Canadian winter. Send us $5.00 and we will express to you as follows:

PLANTS

1 Choice Ostrich Plume Fern.
1 Fine Boston Fern.
1 Splendid Chinese Primrose.
1 Beautiful Cyclamen.
1 Rare Begonia.
1 Fine Cineraria.
1 Strong Asparagus Fern.
1 Large Kentia Palm.

Our regular selling price of these plants will average 50c each, and some of them we retail at One Dollar each.

BULBS

12 Early Narcissus Paper White.
12 Early Roman Hyacinths.
12 Freesia Mammoth size.
(The above are for early Xmas bloom).
12 Dutch Hyacinths (all colors).
12 Choice Single Tulips (all colors).
12 Superb Double Tulips (all colors).
12 Double Daffodils, a choice assortment.
12 Single Daffodils, a choice assortment.
2 Chinese Sacred Lillies.
2 Bermuda Easter Lillies.

Cultural directions for these Plants and Bulbs are found in our Catalog, which we mail free.

The above bulbs will give continuous bloom until Easter. Catalogue prices of these bulbs is $4.00.

This Order is Not Good after December 15th.

THE HAY FLORAL AND SEED CO.

Seedmen and Florists

BROCKVILLE - - ONT.

Ontario's Apples in the West

W. A. Winn, Castleton, Ont.

In the July number of THE CANADIAN HORTICULTURIST I notice an article about the poor quality of Ontario apples in the west. I have just returned from the west, where I talked with the dealers in both Saskatoon and Edmonton about taking Ontario apples. In both places they were disgusted with the apples they have had from Ontario.

Is it not a shame that such a market should be partially lost by those shippers who send poor stuff? Not only the shippers but the province gains a bad reputation. The dealers I spoke to receive Washington apples packed neatly in boxes, and sell the apples for five cents each.

Why cannot Ontario place good fruit in there and let it be known that it is from Ontario? Freight rates between the east and the west should also be reduced. It costs more to send a barrel to the west than it does to Liverpool. Ontario should wake up if it can.

Fruit Inspection

The force of fruit inspectors has been almost doubled by the Dominion government this year. In consequence, the area over which each inspector has worked hitherto has been considerably reduced. The inspection of fruit, therefore, this season should be more thorough than ever before.

Foreign fruit is to be carefully inspected. In this connection the following circular has been issued for the guidance of fruit inspectors and commission merchants:

"Importers of fruit are again warned "that the Inspection and Sale Act, refer- "ring to the grading and packing of fruit "and the size of fruit packages, will be "strictly enforced. Importers of foreign "fruit will be held strictly responsible for "the packing and marking of the fruit "which they sell as well as for the size of "the package.

"It is required that there shall be upon "every closed package of imported fruit, "the name and address of the importer, "the variety of the fruit and its grade (sec- "tion 320). The importer will be held re- "sponsible also in the case of violation of "section 321."

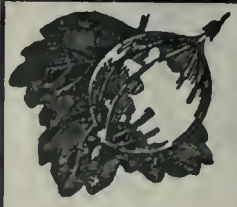
The Grading of Apples

Our correspondents almost everywhere report that apple scab is very prevalent this season. Undoubtedly there will be more than the usual temptation to brand as "No. 1" apples not strictly up to grade. The reputation of Canadian apples has suffered in the past on account of the fraudulently and carelessly packed fruit of a comparatively few dealers and growers, working a great hardship to those who grow clean fruit and pack it honestly.

Special attention is drawn, therefore, to Section 321 (*b*) (111) of the Inspection and Sale Act, Part IX., which provides that No. 1 fruit shall "include no culls and consist of well grown specimens of one variety, sound, of not less than medium size and of good color for the variety, or normal shape and not less than 90 per cent free from scab, worm holes, bruises and other defects, and properly packed."

An increased staff of fruit inspectors will be on duty this season both at shipping points and at the points of distribution, and every provision is being made to examine as large a quantity of fruit as possible. Fruit for local markets must conform to the law as well as that for expert.

Copies of the Inspection and Sale Act,



Hardy Small Fruits

Conditions of soil and climate make it possible for us to produce stock that is hardy, vigorous, and that will give good satisfaction in almost any locality. We exercise great care in the cultivation and handling of our stock, giving personal supervision to packing and shipping, and **warrant all stock absolutely true to name.** This explains why we have built up a large list of satisfied customers.

We specialize on small fruits—Raspberries, Gooseberries and Currants — also Garden Roots, including **Rhubarb, Asparagus, etc.**

List of Varieties:—

RASPBERRIES

Herbert	Cuthbert
Marlboro	Brinckle's Orange
Golden Queen	

GOOSEBERRIES

Josselyn	Red Jacket
Downing	Pearl
Houghton	

CURRANTS

Perfection	Fay
Ruby	Cherry
White Grape	Lee's Prolific
Champion	Black Naples
Black Victoria	

Order now while the list of varieties is complete. Send post card for catalogue and price list.

WM. FLEMING

OWEN SOUND Box 54 Ontario, Can.

GINSENG

Ginseng Roots and Seeds, also Golden Seal Roots for sale at low prices. If you have any Hay for sale see what we can do. Ask for prices.

EASTERN TOWNSHIPS GINSENG GARDENS

Box 1122 Beauharnois, Que.

MONEY IN GINSENG

An acre of matured Ginseng worth from $35,000 to $40,000. Learn how to grow it and receive price list of seeds and roots, also full information from successful growers.

LANARK GINSENG GARDENS CO.

Lanark, Ont.

GINSENG

Anyone can grow it and make money. For planting this fall we are selling

New Seeds, Stratified Seeds and One-Year-Old Roots

Write us for Price List

I. E. YORK & CO., Waterford, Ont.

The Canadian Horticulturist

Vol. XXXV OCTOBER, 1912 No. 10

The Box Packing of Apples

Ralph S. Eaton, President and Manager, Hillcrest Orchards Limited, Kentville, N. S.

THREE essentials are required in securing good results in the packing of apples in boxes,—good fruit, good boxes and a good and economical arrangement of the fruit. I need not refer to the first point, other than to say that unless a fruit grower has clean, well-colored, good-sized fruit for the variety, he should not use boxes at all.

R. S. Eaton

With regard to the box, mention of a few points that I have not seen referred to in the many excellent fruit journals of Canada, and the United States may be worth while to the inexperienced. Though a box should not have rough handling, it should be strong enough to stand a bit of it, in case it falls into careless hands The part most likely to give way is the end of the box. This should be made of spruce or of wood equally strong. It should be in one piece and not less than three-quarters to seven-eighths of an inch thick. If the manufacturer for cheapness in material prefers to use two pieces for the ends, they should be fastened together strongly with staples or douls that will make the end practically as strong as though in one piece. If when making the boxes an end is discovered to be weak, it should be cleated on the inside with two narrow thin cleats close to the edges. To cleat on the outside of the box or to wrap the box with wire disfigures the package and should not be considered for a moment. The sides should be three-eighths to seven-sixteenths of an inch thick, and if in two pieces they should be grooved and tongued. The tops and bottoms should be one-quarter to one-third of an inch thick and in one or two pieces. Both ends and tops should be of good strong wood, not white pine.

I would insist upon all the wood being planed on the outside. It is claimed by some western packers that their wood sawn by fine saws makes a very neat box unplaned, but though I have observed a number of their exhibition packages and had samples sent me, yet I have never seen a real neat box from there.

THE MARKING

I would recommend strongly that one end of each box should have the grade and variety of apples, with the name of the grower or packer neatly printed on it. At the top should be the word "tiers" at one side and the word "apples" at the other, with a dotted line or blank space in front of each word for the number of tiers and apples to be marked by the person packing or branding the box. The printing of the end can easily be done in two colors which will add much to the effect. The material for a box as described can be put up in shook form in St. John, N.B., for twelve and a half to thirteen cents. The other end should have a neat label. Good taste applied in selecting from the samples of a lithograph printer should result in something that would add very materially to the appearance and value of the package. Stencilling the ends should not be considered for a moment in comparison with the label and printing. The label should be about the size of the end piece, ten by eleven inches, and should not cover the whole end of the box when made up.

If the ends and sides of the box are both in two pieces it is desirable, even if the end is stapled, to make the sides break joints with the ends when nailing. Thus the strength of the wider side pieces may be added to that of the staples in strengthening the end.

It has often been claimed that the cost of making the box up is about one to one and a half cents. I have found, however, that lads paid seventy to eighty cents a day can make from one hundred to one hundred and twenty boxes in ten hours.

If care is taken, when nailing, to have the sides and tops come just flush with the end pieces, and the side and ends of the cleats on the tops just flush, the sawed ends of the sides, tops and cleats can be quickly and easily smoothed with coarse sand paper and the completed box have a thorough clean and tidy appearance.

PACKING

Though a great many different packs or ways of placing the apples in a box have been illustrated in magazines, we have found at Hillcrest that a three-two or a three-four pack, according to size of apples, will suit the fancy and number one grades of about all varieties of

Packing Room of The Hillcrest Orchards, Limited, at the Noon Hour

apples and make as tasty and firm a pack as desired. The only exception to this is when necessity requires all or part of the last one, two or three layers to be placed on their edges in order to obtain just the proper height of apples to secure the desired pressure by the bottoms. I have found that lads of good ability, from twelve to sixteen years of age, acquire quite quickly the skill for placing the apples properly in these two packs, and for simplicity, solidity, and freedom from bruising this diagonal pack seems, upon the whole, most desirable. If the edges of the lining paper where they meet over the face layer of the apples are figured or fringed, it enhances the appearance of the pack when the cover is removed, especially if the apples are not wrapped. We also like a corrugated pulp head just next the cover to assist as a cushion and keep out dust when two-piece heads are used. The lining paper must be plaited where it turns from the cover to the sides in order to prevent tearing when the cover bends to the pressure of putting on the bottoms. This plait of about one-half or three-quarters of an inch is rapidly made by putting a number of sheets together and turning all at once.

The stem clippers are indispensable for the face layers. Tissue paper made for the purpose, with one side glazed, has proved best for wrapping and a small circle of letters in the middle of the square, giving the name of the packer, adds somewhat to the style of the pack.

PACKING

It pays to pack from tables rather than from boxes or baskets, and the canvassed top packing tables, which allow four packers to stand at the four sides, are thoroughly satisfactory. With two tables, one for the "Fancy" grade and one for "No. 1," we have found just enough variation in sizes of apples to fill boxes properly. The numbers two and three grades are put, of course, in barrels as they go from the grading tables. The only additional expense incurred, as far as the packing into boxes goes, is simply the mechanical arrangement of the apples in the boxes by light help, which with us is not more than two or three cents per box.

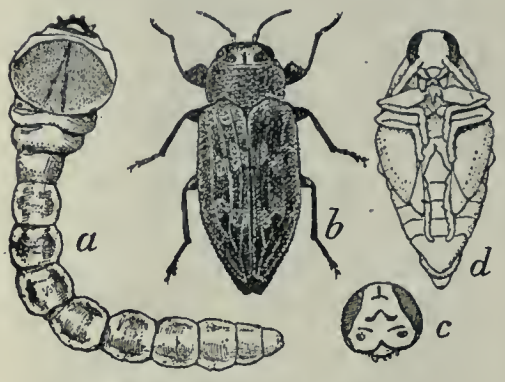
Where apples are very carefully thinned on the trees the grading table may not be so necessary, and there is no question whatever about the wisdom and economy of this careful summer sorting to lessen autumn work, dispense with low grades, and conserve vitality of trees.

I go over the pear trees three times in the season and cut out any limbs that show evidence of blight. By this careful attention I find that I can keep it in control.—W. H. Gibson, Newcastle, Ont.

Fall Campaign Against Insects and Fungus Diseases

Prof. W. Lochhead, Macdonald College, Quebec

WHILE many fruit growers and gardeners wage relentless warfare against insects and fungous diseases during the spring and summer months, an armistice is proclaimed in early fall, and practically nothing is done until the following spring. Experience, the best of teachers, bears out the fact that such a practice is unwise; moreover, a knowledge of the life histories of the pests tells us that many of them can be controlled to better advantage in the fall than at any other time.



Flat Headed Apple Tree Borer

A, larva; b, adult; c, front of head; d, pupa, all enlarged

IN THE ORCHARD

In some localities the Fall Canker-worm (Alsophila pometaria) is troublesome. These moths, as their name indicates, emerge in late fall and lay their clusters of eggs in the forks of the smaller branches. Inasmuch as the female moth is wingless the deposition of the eggs and the subsequent destruction of the leaves by the worms can be prevented by banding the trees with tanglefoot in early October, before the moths emerge.

Many young apple trees suffer from the work of the Buffalo Treehopper (Ceresa bubalus), which lays its eggs in punctures made in the ends of the twigs, causing them to weaken and fall. If the punctured twigs are pruned out and burned in the fall the eggs will be destroyed.

One of the most injurious pests of apple and plum orchards is the Plum Curculio (Conotrachelus nenuphar). It hibernates as an adult under loose bark, among leaves on the ground, and in other protected places. Experience has shown that clean culture in the fall has a decidedly beneficial effect. The unnecessary rubbish that has lain on the ground during the summer, and the leaves that are known to shelter large numbers of insect pests are gathered and burned.

The fall is a good time to get after the borers that affect apple and peach trees. Their presence can usually be detected by discolored bark, frass, or exudation of gum, and the larvæ can be cut out by a knife, or killed by the insertion of a stiff wire into the tunnels. In addition in recent years orchard trees have suffered much from girdling by field mice. To prevent such injury, wire netting two to three feet wide, is cut into suitable lengths, and fastened loosely about the base of the trunks of the trees. The netting should be thrust well into the soil so that the mice cannot readily burrow under it.

BURN THE TREES

The Shothole Borer (Scolytus rugulosus) is also an injurious pest in many varieties of orchard trees. Badly infested trees should be cut and burned, for they are sources of infestation to other trees. With regard to forms such as

Stages in the Life of the Codling Moth

The Codling Moth is one of the worst enemies of the fruit grower. Illustration a shows the adult moth enlarged to four times its natural size. In illustration b is shown the pupa in a cocoon as they are found on the under side of loose bark or in rubbish in the orchard.

Further Stages in the Life of the Codling Moth

Look at this fellow well so that you may recognize him when you see him. Illustration C shows the codling-worm (larva) magnified three times and d the adult and egg on the fruit.

the Apple Tree Tent Caterpillar and the Tussock Moth, which spend the winter in the egg state in more or less conspicuous masses on the bark of trees, perhaps the most effective method of control is the destruction of the egg masses in the fall when the leaves have fallen.

Moreover, the Codling Worm (Carpocapsa pomonella) hibernates in a thick, greyish-white cocoon under bits of bark, in cavities of the wood, and in rubbish about the orchard. Many also are carried into fruit cellars, and in spring the moths produced from them find their way out to the orchard. The scraping of the tree-trunks in late fall and the destruction of lose rubbish would do much to lessen their numbers.

The Oyster-shell Scale (Lepidosaphes ulmi) is one of the most widespread insects of our Canadian apple orchards. It hibernates in the egg stage under the scale on the bark, and hatches in late May and June. A late fall spraying with whitewash when the trees are dormant, followed by another in midwinter, will cause most of the scales to drop to the ground.

FUNGOUS DISEASES

A thorough cleaning of the orchard in late fall of all unnecessary rubbish and leaves is one of the best preventives of many fungous diseases, such as apple scab, brown rust, mildews, and leaf-spots. Many injurious fungi produce winter spores which mature in the dead fruit and leaves during the fall, winter, or early spring. In early spring these spores, or spores produced by them, will inoculate the new leaves and young fruit.

The diseased fruit and leaves should be gathered and burned. They should not be thrown on the manure or compost heap, for then many of the spores which survive the winter will reproduce the disease the following season.

Trees affected with Black-rot Canker (Sphæropsis malorum), Black Knot (Playrightia morbosa), and twig blight should be thoroughly pruned and the cut ends disinfected. These three diseases are making rapid headway and the orchardist should give careful attention to the pruning of his trees.

IN THE GARDEN

A fall cleaning of the garden is even more imperative than that of the orchard on account of the smaller area under intensive cultivation. The great majority of the species of cutworms hibernate in the caterpillar stage, and lie concealed beneath old boards, clods, and so forth. The presence of poultry in the fall in the garden is conducive to the destruction of these as well as of many other hibernating insects. Such common sucking insects as the Tarnished Plant Bug (Lygus pratensis), the Squash Bug (Anasa tristis), the Leaf Hoppers (Jassidae), the pupæ of the Squash-borer, the adults of the two species of Cucumber Beetles, and even the Potato Beetle, are destroyed in large numbers by a careful fall cleaning of rubbish.

Deep fall plowing is a good practice, as many cutworms, wireworms, and white grubs and eggs of grasshoppers are killed by exposure to their enemies and to the freezing effects of winter.

BIRDS HELP

Probably the most important single factor in the control of the insects of the orchard and garden is the presence of winter birds such as the chickadees, nuthatches, kinglets, and woodpeckers, which feed upon the eggs of plant-lice, tent-caterpillars, fall cankerworms, the larvæ of the codling moth, and the grubs of the shot-hole and apple tree borers. Hawks and owls are also extremely beneficial on account of their destruction of field mice, and should be encouraged. The birds can readily be attracted to orchards in fall and winter if baits of bone, meat, and suet are tied among the branches.

Clean culture in the garden, as in the orchard, in the autumn, the gathering and burning of the rubbish of dead stalks and leaves, prevents the development of many fungous diseases. For example, potatoes affected with rot and scab, turnips and cabbages with clubroot, asparagus with rust, and raspberries and blackberries with orange-rust, should be destroyed by burning, and not fed to stock or thrown on the compost or manure heap. In fact, with most of the common diseases one of the best preventive remedies is clean culture in the autumn.

Finally, but not least important, is the value of cooperation among fruit-growers for the prevention of attacks by insects and fungi. It is very essential that all owners of orchards and gardens, for example, do this important work of fall cleaning if the beneficial effects of the work are to be obtained. Municipal or state control would be advisable from the standpoint of prevention of losses.

The Effect of Brown Rot on Plums

These mummified plums, as found on trees in February, still retain the ability to give off spores.

Common Mistakes in Marketing Fruit

P. J. Carey, Dominion Fruit Inspector, Toronto

THERE is one aim that stands out above all others in the minds of those engaged in any particular business, and that is to so shape or manipulate their operations as to enable them to secure the greatest possible profits. In order to reach this degree of perfection, there are two great essentials, namely, a close and careful study of conditions surrounding the particular business in which one is engaged, and then the application of business methods. This, perhaps, will apply more forcibly to fruit handling than to any other business.

In approaching the subject, "Common Mistakes in Marketing Fruit," one is likely to reach the conclusion, after a study of the history of the fruit business up to a few years ago, that it has been one huge mistake or that it has consisted of a succession of mistakes. Perhaps the greatest mistake has been the one that was made by the grower when he divorced himself from the idea that he had anything to do with the marketing of his fruit. The common impression with the average grower seems to have been that when he placed the tree in the ground there his responsibility ended, and that every step to be taken further until the fruit reached the consumer, was within the province of dealers. This being the case the grower was not as interested in growing a good quality of fruit, nor in its proper har-

Packing the Apple Crop in the Orchard of F. A. Forster, Bowmanville, Ont.

vesting and packing as he otherwise would have been. This was the grower's mistake, and now he, as well as the trade generally, have discovered, to their sorrow, that as a result of bad practices the consumers of Canadian fruit have been unfavorably impressed with it. In consequence it may take some years to live down the mistakes of the past.

Within the last few years the trade has undergone a great change in its methods of marketing followed. The numerous cooperative associations organized throughout the province has at last set the grower thinking. Now he knows that he is interested in the fruit until it reaches the consumer, and that the size of his cheque will be regulated by the good or bad sales made. Naturally, therefore, he is now interested not only in the quality but also in the proper packing and handling of the fruit.

We come now to the fruit dealer. Some few may say that the dealer or middleman should be cut out. I agree with the majority that there is room and always will be room for the reputable dealer or middleman. With them we have the two mediums through which to market our fruit, namely cooperative associations and reputed dealers.

Have the dealers made mistakes? Just have a talk with a dealer of twenty-five years' experience and ask him. Perhaps the greatest mistake made by dealers has been the handling of too large quantities of fruit. This involves the hiring of a large number of operators and results in a large percentage of men or boys being engaged who know little or nothing about the work. As a consequence, through lack of judgment, large quantities of inferior fruit are placed on the market, shipments are refused, and contracts broken. It also involves on the one hand the picking and marketing of immature fruit, in order to get the work done, and on the other hand, that which is equally as bad, the leaving on the trees of large quantities of the best fruit until caught by the wind storms or frost. This always has been no small cause of our marketing troubles.

One dealer informed me that he made a mistake when he took an advance on his shipments, which necessitated his apples all going to a certain quarter whether it was the best market for them or not. Other dealers may have discovered that they have made similar mistakes, and it is just possible that some of those who gave the advances have made the same discovery.

COOPERATIVE ASSOCIATIONS

Do cooperative associations make any mistakes? They do. The principle of cooperation is perfect. The practice sometimes faulty. The kingpin on which turns the success or failure of an association seems to be the manager. Accepting anyone as manager except a first-class man is the greatest mistake an association can make.

Some of the associations made the grave mistake the first year of their existence of not making their initial pack such as to give their dealer good satisfaction. As a result they had to look for a new dealer the second year. Changing dealers each year is bad business. It never has been known to give more than ordinary results.

It has been truthfully said that the best advertisement is a "satisfied customer." This surely is the key to successful marketing, and should be the aim of not only the association, but of each of their individual members.

At first thought we naturally conclude that the higher the contract price received for our fruit the better. This has proved to be a great mistake. A manager of an association may, by holding at an exorbitant figure early in the season, secure a contract for his pack at his figure. Later, however, when the fruit is delivered, or being delivered, if the dealer finds that he is being loaded up with fruit of only ordinary quality bought at fancy prices, while his competitor across the street is putting him out of business with fruit bought at a reasonable price, then there is bound to be trouble. If the fruit is at all defective it is refused, or a rebate is demanded, or perhaps a lawsuit results. I would much prefer a good reasonable "live and let live" price, with no rebates and no lawsuits.

Perhaps the greatest problem yet unsolved, and a requirement that should engage the attention of the shipping end of the trade, is the pre-cooling of fruit before shipment. It is required in order that the consumer may get a larger percentage of our fruit at its best.

There is another general practice in marketing which all growers and shippers should war against, and that is the placing on the market of too large a percentage of the lower grades of apples.

With the higher ideals that now seem to be established in the minds of the growers and the packers, coupled with the facilities that are being placed within the reach of all concerned, we should soon be able to eliminate our most serious marketing troubles, and secure for the Canadian fruit industry the high place it is entitled to in the markets of the world.

Orchard Cultivation

T. G. Bunting, C. E. F., Ottawa

Some of our growers are producing better fruit at harvest time than others, and it is noticeable that these more prominently successful ones, when asked regarding what date they commence cultivation, invariably say that their aim is to work their orchards as early in the spring as possible, or when the soil is dry enough to plow. They tell us that to conserve moisture, a loose and fine soil mulch must cover the orchard, that it should be from two to four inches deep, and that it must be put there before the ground dries out.

Plowing should be the first operation practised during the spring on most soils, perhaps on all, with the exception of sand. Sufficient depth of mulch cannot be gotten with the disc harrow or other implement without plowing.

Both sod mulching and clean cultivation as means of conserving moisture have their exponents. The majority of fruit growers prefer to adopt clean cultivation instead of mulching the sod with manure. By clean cultivation, not only is the moisture in the soil held, but also a great work is done in the way of the destruction of many injurious insects.

Garden Work in October

J. McPherson Ross, Toronto, Ont.

THE experienced gardener and enthusiastic amateur always finds this season from now until the ground freezes a busy time of the year. It is also the time to take stock and strike a balance sheet like the careful merchant, showing our gains and losses, our trials and triumphs, to reflect on the experience of the past season, to correct mistakes and to profit on the whole by resolving to secure greater rewards next year and to begin now.

WHAT TO PLANT

Every garden should have beds or clumps of paeonies, phlox, foxglove, and Canterbury bells, as well as shrubbery and a rose bed or border. We cannot ever get the soil too rich for anything, and particularly for our rose bed and tulip and other bulb borders. What applies to one, applies to all.

CLIMBING ROSES

For climbing roses, where planted near the house, the soil, which is invariably poor, should be removed to a depth of eighteen or twenty-four inches and twenty-four inches square and filled with the best fertilized earth. Plant your rose bush in it. Be careful never to put strong manure near the roots. Either put it deeply beneath them and covered with soil or mulched on top. In planting spread the roots out singly and have the hole deep enough to plant the bush well down. The rose should never be planted shallow.

You are often told about firming the soil. There are many reasons for it. Whether it is forest trees or crocus bulbs tread the soil firmly. The foot is a better gardener than the hand. The action presses the soil close to the roots, keeping it moist—it excludes the air and supports the roots so as to prevent the plant swaying with the wind.

Cut the rose branches back to a foot, no lower. This allows the tops to hold the stray litter or mulch placed on them. It also allows for winter killing back an inch or two and when the plant is pruned back, as it should be for to two or three buds, it will be properly pruned.

Rose beds may be any shape that taste or convenience suggest, but preferably on narrow beds, which permit close watch and care. A bed five feet permits two rows of hybrid perpetual down the centre two feet apart between rows and plants, and a row on the outside of tea roses.

THE HERBACEOUS BEDS

Fall permits the division and replanting of your herbaceous beds. Many kinds have the habit of spreading by layers. With many kinds a herbaceous border should be reset every three or four years, if not oftener, with the possible exception of lilies and paeonias.

Those having conservatories or greenhouses will be getting in cuttings of plants for propagating; such as coleus, verbenas and all other tender plants; also repotting and wintering of garden favorites. Oleanders, hydrangeas, and other broad-leaved evergreens not wanted for indoor ornaments may be easily wintered in cool cellars or by digging a pit deep enough to receive the tops and covering over with a glass sash or boards, matting, and so forth, sufficient to keep out very severe frost. These deep garden pits are the favorite method in the middle states for wintering palms, fuchsias, and plants of a like tenderness.

In the vegetable garden the storing and sowing of the season's crops must be attended to. There are always some seeds that have ripened to be gathered and placed in paper bags for next spring's sowing, such as beans, peas, and corn. Leave your cabbage, carrots, and beets till the last thing before hard frost, when they may be lifted and stored in a pit or cool cellar.

Every well appointed vegetable garden should have an asparagus, rhubarb, parsley, and mushroom bed. Asparagus is so easily cultivated, there is no excuse for not having a bed when there is room to plant one. A bed thirty by five would give sufficient of this useful plant to supply the tastes of an ordinary sized family. Many cultivators go to great trouble to prepare a bed for this plant, and as it is a permanent thing they are quite justified in this work. Select a situation that is well drained and dig it at least two spades in depth. This gives you a deep trench in which you can fill six inches of good rich manure, bones, and any other enriching litter which, if it does not decay rapidly, serves the excellent purpose of drainage and keeping the soil loose and moist. When the bed is prepared procure two hundred strong two or three year old plants from the nursery. This is sufficient to plant the sized bed I have mentioned, making three rows eighteen inches apart and plants six inches more apart. Dig out each row by the garden line a foot deep. Against the bank place your plant, spreading the roots evenly out, having the pips or crowns at least three to four inches beneath the surface. Fill in the soil and tread firmly, levelling it nicely and covering all with a mulch of three inches of old manure. Have a neat path on each side. Allow the plants to grow the first year their full strength

A Bed of Asters as Grown by W. A. Greenslade, Peterboro, Ont.

without cutting the stalks. This allows the plant to become well established and subsequent care consists in forking in annually the top dressing put on in the fall and a good sprinkling of common salt sufficient to whiten the ground.

Rhubarb, another indispensable garden necessity, should be planted now. Six roots are sufficient for a family's needs. Plant this in a sunny warm spot in good rich soil, deep enough to cover the crowns at least two inches and two feet each way.

Blanch your celery by earthing up and before stiff frost place two boards V shape, and cover over with straw or leaves. When severe frost sets in remove to a cool cellar, embedding the stalks in clean moist sand.

Cabbage should be pulled, never cut. Save the corn stalks to cover other mulching.

Clean up all litter, leaves, and other decaying vegetable matter and bury in a pit in the corner of the garden, which every good garden should have, to save weeds and garden refuse which, united with ashes and kitchen slops, makes a thick fertilizing material to be dug in the garden next spring.

Heavy clay or retentive soils should be dug up roughly and left for the action of frost and snow. This also allows moisture to penetrate deeper in the ground, also permitting it to be warmed up earlier in the spring by the sun than it would if not thus prepared. Leave your garden in neat order.

Now is the time to make cuttings of currants and gooseberries, grape vines, and many flowering shrubs, as flowering currants, syringas, deutzias, dogwood, privet, and so forth. Make them of well ripened wood nine inches long, and plant in rows in rich loose soil, pushing the cutting down to the top bud; fill in the soil and tramp firmly and mulch heavily. Mulching is indispensable, as it prevents upheaval in the spring by frost.

Fall Planting of Blubs

John Gall, Inglewood, Ont.

All kinds of bulbs are partial to a deep, rich, well drained soil. This is no small part of their successful culture. The site selected should be well drained, either naturally or artificially. Again, in flattish lands, the beds may be made above the surface, some eighteen inches high, and bordered with grass. A layer of rough stones a foot deep is sometimes used in the bottom of an ordinary bed for drainage, and with good results, where other methods are not convenient.

The soil for beds should be well enriched with old manure. Fresh manure should never be used in the soil about bulbs. The addition of leaf-mould and some sand also improves the texture of heavy soils. For lilies the leaf-mould may be omitted. Let the spading be at least a foot deep. Eighteen inches is none too deep for lilies.

All kinds of bulbs look best planted in masses, or at least in groups, and may be planted any time from October till the middle of November. During planting or previously, the surface of the beds should be made somewhat rounding to prevent water standing on them in winter, which is always likely to play havoc. A layer of sand below the surface, or a generous handful about each bulb, will also materially assist in carrying away water from the bulbs.

As the time of severe winter approaches, the ground planted with bulbs should receive a mulch of leaves, manure or litter to the depth of from four to six inches, according to the latitude. It will be well to extend the mulch about one foot or even more beyond the border of the beds. When cold weather is past, half of the mulch should be removed. The remainder may be left on till there is no longer danger of frost. Upon removing the last of the mulch, lightly work over the surface of the soil among the bulbs with a thrust hoe. If the weather happens to be very bright during the blooming season, the duration of the flowers may be prolonged by light shading—as with muslin or slats placed above the beds. If planted where they have partial shade from surrounding trees or shrubbery, the beds will not require attention of this kind.

A Portion of the Vegetable Garden at Inglewood, Hamilton, Ont.

Notice how the garden is divided by a hedge from the rest of the grounds and also the well-made walks.

Autumn Work in the Garden

R. S. Rose, Peterboro, Ont.

Early in October, if you have roses, you can start cuttings. I have found the following method very successful. Take the side shoots near the ground, you will find them the best, and plant them where you wish the bush to stand Press a glass fruit jar down firmly over your cutting and heap the earth around it until only the top of the jar is visible. In the spring, when all danger of frost is past, remove the jar, being careful not to disturb the tender plant. The first few days it may be well to replace the jar during the hottest part of the day. I have found plants started this way give better results than one year plants obtained from the nursery or greenhouse.

Soon should come the general clean up in the late autumn when all old growth such as vegetable vines, stalks, and so forth, should be piled in small heaps. Let the air flow freely through the heaps so that they will dry thoroughly. At the end of a week or so they will be dry enough to burn. Do not remove the ashes of the burnt up rubbish, as it makes a splendid fertilizer. When everything has been burned up dig trenches all down your kitchen garden, throwing up the earth to about six or seven inches. Leave it in this condition for the winter. In the spring level off, then dig up, and turn over the earth twelve inches deep, the deeper the better. By doing this the work is easier, and the earth more mellow and freer from hard lumps.

Canadian Gardens---A First Prize St. Thomas Garden

A. J. Elliott, Aylmer, Ont.

A MAN who dreamed of a garden and whose dreams have come true, is W. R. Rewbotham, of St. Thomas, Ont. His is the first prize garden among those which have competed for the prizes offered by the local Horticultural Society.

Mr. Rewbotham's Home—The Top of the Rustic Arbor in the Garden may be Seen.

I reached its portals one sweltering afternoon in early July, and just the sight of the red pressed brick residence, surrounded by the lawn, and such a lawn! cooled one nicely. On the front, facing the south, were four rustic vases, containing petunias, geraniums, smilax and foliages, giving me an idea that something might be expected worth talking about in the rear of the house.

The owner, a railroad man, a big Englishman, was out on his "run," and his pleasant little Scotch wife courteously gave me all the information I needed, especially so when she learned that it was to appear in The Canadian Horticulturist, a publication they both appreciate and enjoy, and to which she often referred while I was there.

A BORN GARDENER.

As I passed to the rear of the house I was particularly struck with the perfect order, beauty and system displayed. It showed that Mr. Rewbotham is a born gardener, although until quite recently he had no idea that he possessed any talent in this particular line.

After the lawn had been admired, with its composition of a little grass and a lot of white clover, a lovely bank of sweet alyssum forced its presence on the eye. The lawn extends some twenty feet north of the house, and for that distance there is a border, between the fence and it on both sides, that is sown to sweet alyssum, stocks and convolvulus or morning glory. This makes a glorious flanking for the lawn. This beautiful alyssum ribbon of pure white starts from a level with the house, goes west till it meets the garden path, north, along that to the end, jumps across it, then back south to the lawn, then west to the fence nearby, then south to the house line, then east to the lawn. Never have I seen sweet alyssum present so beautiful an effect.

Midway of the lot is the only path. It starts from the lawn, and runs north till it reaches a rustic arbor, circular in shape. The sides of this arbor are built of open rustic sticks, and its peaked roof is shingled with large sections of elm bark. It is a neat affair, and gives a grateful shade to the seats and hammock it contains. Sweet peas are trained up the wood-work. The effect is attractive.

An arch introduces one to this path. A moon flower on one side and a rambler rose on the other also enrich the effect. On the right and left is a new perennial border just started in which year-old Hernerocallis, digitalis, columbine, perennial phlox, star anemones, fuschias and gaillardia grow together, with the interstices planted with gladioli, stocks, salvia, pinks and other similar varieties.

On the right is a small park leading to a tent against the east fence for "the kiddies," two sturdy little lads anyone would like to own. Then come rows of onions, lettuce, carrots, beans, tomatoes, cucumbers and late asters, showing that while the eye is to be pleased, the table is not forgotten.

On the left of the path are a gladioli bed, rose garden, asters and stocks, cel-

The Path to the Summer House—The Plan of the Garden is Here Revealed

The View from a Corner of the Garden—Notice the Effect of the Border.

ery, cucumbers and dahlias. The rose garden is young and not yet in full bloom, but the owner has a hint that next year will give him great pleasure, judging by the way the bushes are growing. His choice is Mildred Grant, Liberty, La France, General McArthur, Duchess of Portland, General Jacquiminot, Kilkenny, Van Houti and Dean Hale principally.

Mr. and Mrs. Rewbotham are great lovers of stocks and wonder why people do not raise more of these beautiful flowers. He is a chronic prize taker in St. Thomas, and on some occasions has been judge of the local flower shows. Last year he took all the first prizes given by the Horticultural Society, and so far this year has taken three firsts and one second prize.

Asked as the course of procedure in producing such a fine garden, Mrs. Rewbotham told me that ordinary manure and bone meal were used for the garden; whale oil soap diluted for rose pests, and a compost of bone meal, ashes and salt for the lawn.

Mr. Rewbotham's method of celery raising is worth noting. He makes a tile shaped coat of felt paper and fastens it around the plant. While there I saw the young leaves appearing above the coat. It is sucecssful, and saves a lot of hard digging.

When not on duty, Mr. Rewbotham is always in the garden, and certainly this happy pair get all the good there is out of this beautiful home.

Lilium Harrisii—Should be potted in October in six or seven inch pots in good rich, loamy potting soil. Keep them in a cool window and do not give them too much water for a month or six weeks until well started. After this they require more water. Spray the tops with tobacco water once or twice to keep down green aphis. Spray the tops frequently with clear water.—Wm. Hunt, O.A.C., Guelph.

Fall Planting Recommended

J. McPherson Ross, Toronto, Ont.

Speaking from actual experience as a practical horticulturist, I most emphatically recommend fall planting for the great majority of fruit and ornamental stock with the possible exception of evergreens, peach and cherry trees. Nor would I except evergreens if proper care is given to seeing that the roots are not too long exposed when transplanting, but it is preferable to transplant them in September.

The great requisite for fall planting is good drainage and although this is just as necessary and essential in the spring it is compulsory in the fall. This being provided then there is everything to be said in favor of fall planting. Nor do I believe that this important fact is sufficiently impressed on the mind of the intending planting or gardening public as it should be, or are they aware of its importance.

Let me mention a few of the reasons why fall planting is best. First, the ground or soil is in the most desirable condition. Being dry, mellow, and warm it is easier handled or worked than it can possibly be in the spring, and when the stock is planted it has a chance to get the soil properly settled about the roots and it is all ready to start in to grow the first thing in the spring. The average experience of every spring planter is the loss of the best part of the spring weather before the stock arrives from the nursery. Many delays such as may occur by the nurseryman being rush-

An Illustration of How Tomatoes Grow in Mr. Rewbotham's Garden.

ed with orders, delays by congestion of freight on the railroad, lying at the station before notification is sent of arrival, and so forth. Then frequently, when ordered in the spring, the nurseryman may be out of some particular tree or plant, and has to order from some other nursery, and they have to experience the same delay again that his customer may experience.

An Exhibit of Flowers arranged by The Hamilton Horticulturul Society

For many reasons, and those not of a selfish nature, most nurserymen recommend fall planting. On the customer's part the only objection is the prevailing notion that fall planting is risky and that they would be out of their money for the winter season; but let us not mention that reason when we consider how much more can be said in favor of fall planting.

PLANT ROSES IN THE FALL

We hear of so many failures in planting roses in the spring that we recommend everyone to be sure and plant their rose bed or border in the fall. Most failures in rose planting in the spring occur through not cutting the wood or young tops back to two or three buds and by not planting the bush deep enough. Let me dwell on this point. Thousands of rose bushes are brought into the country imported from the Old Country with long woody stems on or just barely shortened. These stems being pithy they soon evaporate what sap may be in them and in the roots before the roots make new roots or begin to absorb moisture from the soil.

In the majority of cases the plants are planted too shallow in the soil. The whole stock of the rose, whether on their own roots or warranted stock, should be covered up and thoroughly trampled firm with the foot when planted. Thus spring planting is often fatal to roses—first, by not cutting the tops back at once when received; second, by shallow planting; and third, by not firming the soil thoroughly when planted.

Bulbs for Fall Planting

E. F. Collins, Supt. of Parks, Toronto Ont.

TULIPS in variety and color are the only really reliable bulbs which can be depended upon to give a thoroughly good display next spring. There are many ways of using them. They can be mixed or grown in set colors, or planted in groups in the shrubbery or herbaceous borders.

I shall endeavor to give a few simple directions in regard to the arrangement and planting.

For set beds, red, yellow and whites look well together, or crimson and white, or yellow and red, or a combination of the pink shades. Take a small circle or round bed, plant a mass of Vermilion Brilliant in the centre, and edge with three rows outside of La Reine white, or reverse by planting the centre with Joost van Vondel, a grand tall white tulip, and edge with Vermilion Brilliant.

For ribbons or long borders, plant in rows six inches apart each way. Keizerkroon would be a good one for the centre, then a yellow, either Chrysolora or Mon Tresor, with the outside two or three rows planted with a scarlet, say Crimson King. In pinks, I think Proserpine is the queen of all. With it can be used Rose Grisdelin or La Reine, which comes sometimes pink flashed.

Double tulips are more lasting, and make a grand mass of color although, of course, they cost much more.

I consider Vuurbaak, a bright red, is the best; in yellow, Courrone d'Or, and in white, Alba Maxima.

For late or May planting the Cottage Gordun and Darwin types are the best. They should be planted much more freely than they are in the perennial bed and shrubberies. In planting, put them down at least eight to ten inches below the surface of the soil. The Parrot tulip is probably the most unique and richest of all the tulips when planted in groups or in the shrubbery or perennial beds. All the varieties can be had either in self colors or flashed and blocked in different shades.

A LIST OF VARIETIES.

The following list will give a good variety of colors for the everyday garden: Clara Butt, rose color; The Sultan, deep maroon; Pride of Haarlem, scarlet pink; Painted Lady, milky white, shaded heliotrope; Wm. Paul, purple to violet; Buffon, rosy lilac; Harry Veitch, dark brown. These are all the plain colored Darwins, and should be planted in permanent positions.

COTTAGE VARIETIES.

The May flowering, or cottage tulip, includes many varieties and shades of color. The following are a few of the best for the small garden: Albion, white; Golden Beauty, yellow; Bridesmaid, cherry rose; Firefly, brilliant orange; Fulgen, scarlet, and Fairy Queen, rosy heliotrope. There are, also, the variegated foliage tulips, some of which are very attractive, such as the Duke of York, a double flower; Cottage Maid,

Horticultural Products of the Famous Niagara District

For nine years now the St. Catharines Horticultural Society has held most successful exhibitions of fruit and flowers. The illustration shows a portion of the fruit and flowers shown at one of them. This year's exhibition was the most successful yet held.

yellow rose, and La Candeur, double white.

The best varieties of Dutch Hyacinths for bedding are following: White, Madam Van der Hoop, La Grandesse, Baroness von Thuyll and Queen Victoria; pink, Gertrude, Gigantea and Lady Macaulay; blue, Grand Maitre and King of the Blues.

The minature hyacinths can also be used for spring flowering, but they must be planted a little closer than the other type, about six inches each way, to have a good effect. Many of the varieties of narcissus are excellent for spring flowering, and if planted in groups they are so much the better. Plant ten inches deep, if they are to remain several years.

An added charm is given by planting in the same trench with them, about four inches deep, some of the Scilla Sibirica snowdrops and crocuses. These flower in between the foliage of the narcissus, at least two or three weeks earlier. The Polyanthus type include the following suitable for the garden: White, Perfection; Imperator, yellow; Goldfinch, yellow, and Lord Charming, primrose.

The trumpet type includes the following: Ard-righ, golden yellow, very early; J. B. McCann, white petals and soft yellow trumpet; Madame de Graff, a perfect gem; Madame Langtry, pale cream; Horsfieldi, very fine, and Emperor and Empress. Much might be said about other varieties, but space will not permit.

Handling the Potato Crop

A. G. Parker, Boston, N.B.

There is money in raising potatoes if they are properly handled. Last season our crop averaged one hundred and twenty barrels to the acre. No one should be satisfied with anything short of one hundred and ten barrels an acre. Such a yield will be easily reached if proper methods are adopted.

In selecting a fertilizer for potatoes, one should be careful to choose a fertilizer strong in potash, as it has been shown by repeated analysis that a crop of three hundred bushels of potatoes removes from the soil approximately sixty pounds of nitrogen, thirty pounds of phosphoric acid and one hundred and five pounds of potash. Thus a fertilizer to be used by potatoes should have these elements in approximately these proportions. If a good clover sod has been ploughed under the previous fall, the nitrogen will not be required, as the clover, being strong in nitrogen, will provide an ample supply.

If barnyard manure is to be used it should be supplied in the fall. Spread it broadcast and in not too large quantities, not more than from ten to fifteen tons per acre. Supplement it by an application of one hundred and forty to one hundred and eighty pounds of sulphate of potash, and two hundred and fifty to three hundred and fifty pounds of acid phosphate.

SEED SELECTION.

Seed should be selected at the time of harvesting. In this manner the size, form, time of maturity and prolificacy of the plant, can be determined quite easily. Carefully select from those hills which make the most vigorous growth of vines, and which have produced potatoes large in size, the well shaped potatoes that are free from protuberances of any nature. If this method of selection is carried out the quality of the crop will improve rather than deteriorate, and fewer unmarketable potatoes will be noticed.

HARVESTING THE CROP.

The sooner the potatoes are dug after the tops are dead, the better. Last season we started digging on September 27th, which was four days after the tops were killed with frost. Our potatoes were perfectly green up to the time they were killed with frost. We used a Cambridge digger, which is of the elevator pattern, and it gave good satisfaction. We worked four horses on the machine, and had six men picking. In this way we averaged about two hundred and fifty barrels a day. Potatoes can be dug very much cheaper by means of a machine, and if proper care is exercised there will not be any more damaged potatoes than if dug by hand.

Potatoes should be stored in a dry, frost-proof cellar, or warehouse, where the temperature is kept even. The temperature should be about two degrees above the freezing point, and kept as near as possible to that during the time of storage. Free circulation of air should be had through the potatoes. Instead of putting the potatoes against the wall in large bins, the way so many farmers do, a small partition made of narrow boards, spaced a little, should be made against the wall, about one foot from the wall. If a large quantity is to be stored, the bins should be divided in the same manner.

On soils containing clay or humus apply basic slag in the autumn and at the rate of from 500 to 600 lbs. per acre.

The fruit growing industry in Lambton County is going forward rapidly. The cold winter of 1911-12 has not in any way discouraged the growers, although about five per cent of the peach trees were killed, as well as most of the blossoms. I expect that the plantings during 1913 will far surpass those of any other year.—D. Johnson, Forest, Ont.

Red Spider on Cucumbers

Prof. Wm. Lochhead, Macdonald College, Que.

"The last three years I have tried to grow cucumbers. I get them to grow nicely until the cucumbers are about two inches long, then the leaves turn yellow. The small cucumbers wither up and the plants die. I have tried different kinds with the same result. What is the matter? —H. W., Toronto, Ont.

Although the information given is too meagre to allow us to decide definitely as to the nature of the trouble, yet we are of the opinion that the injuries are caused by the presence of red spiders on the leaves. These mites are often abundant in dry seasons on cucumbers, as well as on many other plants. They suck the juices, and affected leaves gradually turn pale, then yellowish, and finally brownish, before succumbing. The loss of so much sap from the leaves reduces the vitality of the cucumber plants, and the leaves are unable to manufacture the substances necessary for the growth of the fruit.

If a leaf attacked by red spider be examined carefully with a magnifying glass a thin web-like tissue will be found on the lower surface within which they feed and reproduce. As these pests are very minute they are apt to be overlooked until much damage is done on account of their large numbers.

Red spiders are usually kept under control by frequent sprayings with water as they appear to thrive only in a dry warm atmosphere. This simple treatment will suffice if begun sufficiently early; but if the webs on the undersurface of the leaves are allowed to be formed, it will not be effective, and some other remedy must be applied. One of the best remedies is a weak summer strength of lime-sulphur, such as fruit-growers use. Tobacco wash, sulphur powder, and soap solutions will also be found useful. Care must be taken to have the under surfaces of the affected leaves sprayed.

Success with Celery

Where the soil and other conditions are favorable celery growing is one of the most profitable lines of vegetable production. The illustration on the next page shows part of a celery field on one of the leading market gardens on the outskirts of Peterboro. The proprietors, Messrs. Card & Williams, have had marked success in the production of celery on this land for a number of years, celery from this field having won the first prize at the Peterboro Exhibition for the past several years.

A feature which has contributed more than any other to their success is the application each year of a heavy coat of fertilizer. Although the soil is a deep rich, black muck, which has been manured heavily for the past several years, it is given an additional heavy application of mixed stable manure before each

Celery as grown by Messrs. Card and Williams, Peterboro, Ont.
(See Adjoining Article.)

crop is planted. The fertilizer which has given the best satisfaction is a mixture of about equal parts of horse, cow, and pig manure, which has been piled together and well rotted before being applied to the field.

The early varieties are planted as soon as the soil can be prepared in the spring. The practice followed is to plant the celery in double rows on the flat, no trenches being dug. The plants are set six inches apart each way, and opposite in the rows, so as to facilitate weeding from either side. The rows are four feet apart. From the time the plants are set out, until they are banked or boarded up for bleaching, the field is given almost daily cultivation.

Boards are used for bleaching the earlier varieties. The later varieties are banked up as this affords a greater protection from frosts. A glance at the illustration on the front cover of this issue of The Canadian Horticulturist will show the method of placing the boards alongside the celery. The boards shown on the far side of the row of celery were each ten inches wide. This celery was planted on June 11th, somewhat later than usual, owing to the very wet and backward spring. The photo was taken September 9th, when most of this patch had been harvested.

When the onions are ready for harvesting, run the cultivator along the row, so as to cut off roots and turn onions loose. With a wooden rake put four or six rows into one. Then they are ready for topping as soon as properly dried.

For celery we use White Plume, Paris Golden Yellow and Giant Pascal. The two former kinds can be planted on the level, the latter in a shallow trench. It can be left in the ground until the tenth of November, when it can be taken up and packed in the cellar for winter use. —E. G. Cooper, Alberta.

Seed Potatoes

Wm. Naismith, Falkenburg, Ont.

When the potatoes are thoroughly ripe, about October fifteenth, in bright, sunshiny weather, I run the digger taking every second row, leaving them a short time on the ground, so that the tubers are dry. I sort out the small potatoes and bag up the seed and remove to the pit. I use a sand bank with a slight incline to the south. This makes an ideal place, it being always dry. The dimensions of the pit are four feet wide, three feet deep, with sufficient length to hold one hundred bags, leaving six inches on top for ventilation. I use strong cross pieces of wood every six feet, a covering of poles lengthways of the pit overlaid with six inches of marsh hay, and covering with a foot of sand, leaving a space for ventilation at each end up to November fifteenth, when all is made secure for the winter. All the material used is found close at hand and costs only the labor.

I have followed this method of storing for twenty-five years, and never have any loss. The potatoes come out dry, no sprouting, and always ensure a full stand of vigorous plants. I stored and sold in the spring of 1911, seven hundred bags. I always find a good market and good prices. My average yield is two hundred and twenty bags per acre, and the land is left in fine condition for the succeeding crop, after which if seeded down in regular rotation several crops of excellent hay are grown.

SELECTING SEED

When the tubers are ripe and just before harvesting the crop, I select the best plants by going up one row and down the next, selecting for producing proclivities and uniformity in shape and size. Long experience and close observation make this an easy matter, even when the stalks are dead, for they still retain their natural form, and there is a best in every row, just as surely as there is a best in every flock and herd. I believe in planting the best and trying to improve upon it. I plant this selected seed the next season on fresh cleared and burned bush land. I again use the seed taken from the new land to plant the main crop the following spring. I have followed this rotation for many years, growing from the top seed or ball. I have carried on experiments for over twenty years, and have succeeded in getting three good varieties, namely, Rose of the North, Canadian Standard, and a new Empire State not yet sent out, but which may appear in 1912.

JUDGING POTATOES

The first consideration is ability to produce bushels to the acre, coupled with quality and an even surface. Too many points should not be given for appearance, as many of this class are poor producers, and will not repay the farmer for his care. I refer to what are known as fancy varieties. A judge to be able to do his work intelligently must have a practical knowledge of the varieties at present in cultivation, and their adaptability to different latitudes, as some of the most popular varieties grown in the Niagara Peninsula do not adapt themselves to the Nipissing or Algoma Districts.

When growing seed of early varieties of potatoes to get the best returns plant June 1st, so as to avoid any check, as early varieties require to grow rapidly. This gives them June, July and August in which to mature. Better returns are thus obtained than when they are planted earlier.

Sprays for Vegetables

E. M. Straight, Macdonald College, Que.

We have demonstrated that the various leaf spots and blights of the tomato may be controlled by bordeaux mixture, but if early ripe fruit is the thing sought it does not pay to spray tomatoes. If the grower is chiefly concerned with the production of large quantities of ripe fruit for the canning factory the use of insecticides, we believe, would abundantly pay; but if there is no outbreak of beetles we do not recommend spraying them. Tomatoes are subject to the attack of the same beetles as the potato. It is seldom, however, that the outbreak is serious on these plants.

The celery plant is very susceptible to disease. Early and late blight attack it from the seedling stage, until the harvest. At some experiment stations, experimenters have not been able to control the malady. We have, and did last year control these diseases effectually by the use of bordeaux commencing at the seedling stage, and continuing with bordeaux mixture at intervals of ten or twelve days until the end of the season. Plants not sprayed were not taken from the field, while the others were of normal size and quality.

The Canadian Horticulturist

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The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

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7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,627
" " " " 1908, 8,695
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" " " " 1910, 9,067
" " " " 1911 9,541

September, 1912.... 11,477

Sworn detailed statements will be mailed upon application.

OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words "I saw your ad. in The Canadian Horticulturist." Complains should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed

THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

THE JORDAN HARBOR STATION

While the Ontario Government has done much to promote the cause of horticulture, its treatment of the Jordan Harbor Experiment Station, from the inception of that institution, has been disappointing to those who would like to see the station accomplish the purposes for which it was established. Far from being sympathetic in the first place, with the proposal to establish an experiment station in the Niagara District, it was not until the land for the station had been given to the government free of cost that it consented to meet the expense involved in the equipment of the station and its management. Even in this, however, it has appeared to be more anxious to expend as little as possible than it has been to expend whatever sum might be necessary to enable the station to fulfil the work for which it was established.

Three years ago THE CANADIAN HORTICULTURIST protested when it was announced that a man, who, while one of the most successful apple growers in the province lacked a knowledge of the growing of tender fruit such as is produced in the Niagara District, had been appointed as a sort of under manager of the station. Nearly two years ago we protested again when it was announced that the government, instead of appointing a competent resident superintendent at an adequate salary, had decided to vest the management of the station in the hands of an official of the department, resident in Toronto, already overburdened with other exacting duties. We then pointed out that such management was certain to interfere with the efficiency of this official's services in other directions or result in the work of the station being neglected.

The wisdom of the stand we then took has recently been confirmed by an editorial contributor of the Weekly Fruit Grower, published at Grimsby, Ont., in the Niagara District, who, after a visit to the station, made a number of serious charges concerning it in that publication. His charges are that crops intended for revenue have been planted upon the most unsuitable land possible, and are naturally a failure, that experiments are begun and suddenly abandoned without any apparent reason, and that officials who have conducted experiments at the station have left without leaving any record of the work they have accomplished, thereby making it impossible for their successors to continue their work where they left off. The writer in question endorses the demand we made two years ago that the station should be placed in charge of a competent resident head.

No person acquainted with the situation will lay any blame at the doors of the present director of the station, Mr. P. W. Hodgetts. Fruit growers everywhere realize the valuable work Mr. Hodgetts is doing on their behalf and the numerous other demands that are made on his time. Existing conditions will not be remedied until the government takes a more sympathetic interest in the work of the station and appreciates its possibilities more fully. When this change of attitude takes place it will be made manifest immediately by the appointment of a thoroughly competent resident director at an adequate salary, and by the granting of sufficient funds to make possible the conduct at the station of the broad lines of work which fruit and vegetable growers everywhere expect to see it perform.

RAILWAY GRIEVANCES

The fruit growers of Ontario have been so uniformly successful, since the establishment of the Dominion Railway Commission, in obtaining an improvement in their treatment at the hands of the railway companies whenever they have laid their complaints before the commission, they may look forward with confidence to receiving a sympathetic hearing should they again decide to lay their case before that Tribunal. Month by month, but more particularly during the fruit shipping season, complaint has been growing in regard to the inadequate service given by the railway companies in the handling of Ontario fruit intended for the western markets. The shipping rates west of Winnipeg are so exorbitant as to practically shut Ontario fruit out of the prairie provinces. This has forced the auction of much of that fruit in Winnipeg as soon as it arrives.

When the railway companies last appeared before the railway commission they promised to provide a four and a half day service to Winnipeg. It usually takes seven to eight days. This constitutes a serious grievance both to the growers in the east and the consumers of fruit in the west. The imperative need for an improvement in these conditions is now apparent. It should be possible to present a strong case before the Board of Railway Commissioners.

A NATIONAL DISH

What is the national dish of Canada? A correspondent points out that England has "roast beef," Scotland "oatmeal," and Ireland the "potato," and that these divisions of the Empire have also as their emblems the Rose, the Thistle and the Shamrock. Canada has the Maple Leaf, but nothing that can be recognized as our favorite viand. Our correspondent suggests that we constitute the apple as our premier delicacy.

The suggestion has much to commend it. Apples are grown in Canada from the Atlantic to the Pacific. Even the prairie provinces are able to produce certain varieties. Apples are beautiful to look upon, delightful to taste, beneficial to the system and are enjoyed by one and all. We rise to move that our contributor be thanked for his suggestion, and that we establish King Apple as our national dish. Speaking to our motion we venture to suggest that comparison be made between a beautiful rosy red apple and beans, the emblem of that great country to our south, to see what prestige the adoption of our motion will confer upon us as a nation.

IMPROVEMENT OF SMALL TOWNS

Since the use of the automobile by the more wealthy residents of our towns and cities has become general, with the numerous trips through the country districts that their use involve, an added incentive has been given to numerous small towns and villages to beautify their streets and the surroundings of their homes. In a letter to THE CANADIAN HORTICULTURIST, Dr. J. E. Klotz, of Lanark, Ont., draws attention to this fact, and says:

"It is now a well-known fact that when "city autoists take a Saturday, Sunday or "other holiday in the country they in-

"variably choose as their destination or "'dinner stop' the most attractive ham-"et in the district, noted probably for "its tidy river and ponds, its avenues "of maples and elms, its velvety park, its "private lawns and well kept boulevards, "its quaint and vine covered perches and "walls and its many glorious flower gar-"dens."

When a municipality enjoys advantages such as those described by our correspondent, it becomes a far stronger business magnet than most people realize. Not only does it attract a transient trade but it in many cases becomes the determining factor which lead industries to locate in such centres.

Quality

The fruit grower who decides to make a little more money out of his fruit crop by putting all the small, wormy, or bruised apples at the bottom of the barrels with the good fruit on top is careful that his name does not appear on the barrel. He knows that the people who buy this fruit once and get "bitten" will not buy fruit again, knowing it has been packed by the same man.

The same principle holds true with every kind of goods, which are bought and sold. People will not knowingly buy the same goods a second time, if they have bought them once and found them unsatisfactory or unreliable. Take the case of a nurseryman whose stock is not true to name, poorly grown or diseased. Or a seedsman whose seeds are not reliable. Or a manufacturer whose goods are inferior. Could these people hope to build up a big business among a certain class of people with such unsatisfactory goods?

When you see advertisers continue to spend money to tell people about their goods, describing the goods and connecting them up with their name, you may be sure they are finding their advertising profitable, or in other words that people are buying their goods and finding them satisfactory. No firm can afford to spend money to tell people about its goods if these goods are inferior or unreliable.

Notice the firms who have been using space in The Canadian Horticulturist regularly to tell you about their goods. They are all good firms, and their goods, or the service they have to offer, may be depended upon. And the new announcements appearing in The Canadian Horticulturist from month to month are from firms we feel we can recommend.

Sometimes, of course, there are fakes in advertising as in anything else. These people by making a lot of fine promises that they cannot fulfil often secure considerable business but they are soon found out and are obliged to place their advertising in other mediums, where it will reach a fresh crop of prospects. They cannot continue doing business with the same people.

This last kind of people do not advertise in The Canadian Horticulturist because they cannot. Read our "Protective Policy" on the opposite page.

We do not admit advertisers to our columns except such as we believe are thoroughly reliable.

Even more important than such considerations as these, however, is the effect such surroundings have on the citizens, young and old, who are so fortunate as to live in their midst. Most of our city fathers have been far too slow in their appreciation of the asthetic value of such considerations as these. An improvement is now manifest in numerous sections and we may expect to see this improvement spread. Our horticultural societies are doing much to bring it about.

At long last congress has passed a bill by which a parcels post system will be established in the United States on and after the first of the new year. It is time that something more was done in Canada than has been done as yet to introduce such a system in this country. Parcels post is general throughout Europe and even in some South American countries. Even although Canada is large and our population sparse we should not lag behind in a matter of this importance.

A grocer in the Maritime provinces who recently suffered loss through the receipt of some fraudulently packed fruit made public the treatment he had received by exposing the package and its contents, with the name of the shipper, in his window. His protest would have been more effective had he made it to the fruit inspector, for his district, of the Dominion Department of Agriculture.

PUBLISHER'S DESK

Is not that display of celery on the front cover of this issue of THE CANADIAN HORTICULTURIST something worth being proud of? It was grown in the open field by Messrs. Card and Williams, of Peterboro, and was photographed by a representative of THE CANADIAN HORTICULTURIST just as it was growing at the end of a long row. It was little, if any, above the average quality of the large crop of which it formed a part, and which is illustrated also on page two hundred and thirty-nine of this issue. There is money in such crops as these when you know how to grow them. This accounts for the increasing number of market gardeners and vegetable growers we have in Canada.

We feel a little proud of the contents of this issue of THE CANADIAN HORTICULTURIST. Look over the various articles and the names of the contributors. You will see, if you are at all familiar with our leading authorities in the different provinces, that the articles are almost all by contributors enjoying a national reputation along the lines on which they have written. It is our endeavor to secure as contributors, only such parties as are known to be thoroughly competent to deal with the subjects they handle. The fact that this publication is known as "The Old and Reliable Canadian Horticulturist," and that its circulation and influence continues to grow rapidly is an indication that we are succeeding with our aims. Our November issue will equal this one in point of excellence. Watch for it and, as usual, you will not be disappointed.

During the next three months several thousand subscriptions of THE CANADIAN HORTICULTURIST will expire. A few hundred are already in arrears. Our subscribers will confer a great favor on us, and possibly save inconvenience to themselves, if they will make it a point to renew their subscriptions promptly. There is a possibility that the subscription price of THE CANADIAN HORTICULTURIST may be advanced at the first of the new year. This being the case, we would advise our subscribers to take advantage of our offer to send THE CANADIAN HORTICULTURIST for two years for one dollar. Do not allow this to escape your memory.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

St. Catharines

The first exhibition of flowers and vegetables grown in the gardens of the Alexandra School, St. Catharines, was given recently. The display was made in one room, and consisted of exhibits grown and arranged by the pupils of the school, and each class was given fifteen minutes to observe the display and learn the names of the various exhibits. The whole was under the direction of Principal Gayman, assisted by Mr. Vosburg, the caretaker of the school, grounds and gardens, and the exhibition was attended by all the teachers of the school, by Mr Watson, chairman of the Public School Board, and Trustees Moyer and Watts.

The vegetable display consisted of large pumpkins, squashes, ornamental gourds, mock oranges, beets, tomatoes, cabbages, cauliflowers, radishes, beans, corn, flax, sweet potatoes and peanuts, which do not come to maturity in this climate, and all the samples were well grown.

The flowers were of different varieties, displayed neatly in vases, and made a brilliant show. They consisted of a large number of blooms, including varieties of asters, dahlias, mignonette, dianthus, zinnias, phlox, verbenas, candy-tuft, snow on mountain, African and French marigolds, pansies, gladioli, sweet alyssum, nasturtiums, petunias, scabiosa, corn flower, golden rod, geraniums and others.

The vegetable garden is at one side of the grounds, the flower garden at the other, though flowers appear in different parts, for ornamentation. In the vegetable garden are different varieties of seeding pine trees, Kaffir and sweet corn, onions, lettuce, etc.

Tillsonburg

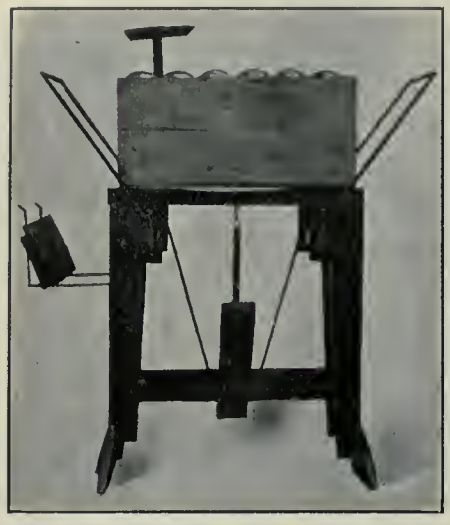
Our local skating rink was a bower of beauty recently with bunting, flags, Chinese lanterns, and many tables filled with brilliant-colored blossoms, the occasion being the annual flower show under the management of the Horticultural Society. A large number of valuable special prizes was an incentive to the members to put forth their best efforts, and so the number of entries was large and the quality of the exhibits of a high order.

The refreshment section of the show vied with the flowers in beauty and was well patronized. Music was furnished by the Imperial orchestra.

The flowers were judged by Mr. Hay, of Brantford, who spoke in very complimentary terms of the exhibition, praising especially the showing of asters and gladioli.

Quick and Easy

That is the way the DAISY APPLE BOX PRESS works. A simple pressure of the foot brings the arms up over the ends of the box, automatically draws them down and holds them in place while being nailed. The fastest and only automatic press on the market.



Pat. No. 104,535

If you pack apples in boxes, this machine will be a great convenience to you and will save you time and money. Write for prices to

J. J. ROBLIN & SON

Manufacturers **Brighton, Ontario**

A Central Co-operative Association in Nova Scotia

M. B. Davis, Bridgetown, N.S.

THE present year has seen one of the dreams of the ambitious fruit grower in Nova Scotia brought to a realization. For some years past the more up-to-date and energetic fruit growers of the Annapolis and Cornwallis valleys have been advocating co-operation. This movement commenced at Berwick some five years ago when a company was formed, under the name of the Berwick Fruit Co., Ltd. This pioneer company met with such evident success that it was not very long before other companies were established throughout the valleys, and in 1911 there were about 30 of these companies in operation.

As the number of companies became larger the need of a central organization became apparent, so much so in fact that several of the local companies cooperated and employed a general manager for the season of 1911. The results of this experiment were so satisfactory that in the spring of this year a vigorous campaign for the organization of a central company was made with the result that at the present time, "The United Fruit Companies of Nova Scotia Ltd.," is a realized anticipation, with a well organized office staff and manager. It is now in a position to do business for affiliated Companies under its charge. Probably no greater stride in horticultural work has been made anywhere in Canada than in this instance, for when we think of such a large number of growers working under one head it is surely cause for gratification.

The policy of the company is one which smacks of the true principles of co-operation, leaving out the element of petty prejudices and personal gain. These companies have united to advance the interests of each other in the packing, marketing and shipping of fruit, purchasing of supplies and any other matter beneficial to them. The central will purchase fertilizers, barrels, oil, spray materials, and other farm requisites, purchasing the same in such large quantities that they will be enabled to obtain the very lowest prices that the markets afford. This was very successful last season when the organization was not completed, so that now great things are looked for in this line.

Aside from the purchasing of supplies the Central handles all apples for the affiliated companies either selling the same or shipping them on consignment. The prices of these apples are placed in a joint pool and averaged at the end of the season, the prices for the different varieties being kept separate of course.

In this way each company obtains the same price for their fruit regardless of what their own fruit sold at. This of course would not be at all possible unless a uniform pack was obtained from the different companies, and this the Central expects to bring about by a rigid system of inspection accompanied by instruction in the art of packing, grading and handling fruit. Already the buyers are expressing their desire to handle only the cooperative pack of ap-

Apple Trees

We are producing hardy varieties of Apples and other fruits for the North. Our Nurseries at Pointe Claire, extending over 170 acres, are devoted to the growing of Hardy Fruit Stocks and Ornamentals, Roses, etc., etc. Our Apple Trees are **budded** on whole roots and grown under all the rigorous climatic conditions of this section. For this reason they are pronounced by experts to be best suited as stock for Northern planters, both in the Garden and Orchard.

Intending customers are urged to place their orders **now** while we have a full selection of the best standard varieties.

Catalogues and Lists cheerfully furnished Free of Charge

Canadian Nursery Co., Ltd.

(Charles K. Baillie, General Manager)

10 Phillips Place - Montreal, P. Q.

You Get

BETTER PRICES

For

APPLES

Packed in

BOXES

Up-to-date growers and shippers have demonstrated this fact. We make the boxes. Write us.

The Firstbrook Box Co., Ltd.

TORONTO

ples. so that here we have one factor which alone is worth co-operating for in this line of business.

Heretofore the transportation facilities afforded the fruit grower have not been of the best, but already the Central has brought enough pressure to bear to have five steamers subsidised in their own name thus obtaining the nest egg which has always gone to the speculator. Not only are expenses thus reduced but the rates for this year are far more reasonable than have been. Considerable improvement is being made, also, in the railway service. The erection of a frost proof warehouse in Halifax has been assured us, so that here again the management finds scope for their ability to better conditions for the producer.

It is the intention of the company to place salesmen in all the larger markets who will study the conditions prevailing and endeavor to cater to their requirements. In this way it is hoped that the producer and consumer will be brought in closer touch with each other and both profit by the same. With the head office in Berwick, under the management of Mr. S. B. Chute, and the shipping office in Halifax the company is in an excellent position to handle the apple crop of this year with the quickest possible despatch. Thus the prevailing conditions in the valleys will be much improved over previous years.

Slack Barrel Material

That Canada is fast losing her possibilities as a producer of tight cooperage is brought out by statistics compiled by the Forestry Branch of the Department of the Interior. These show that, whereas 2,768,000 oak staves were cut in the Dominion in 1911, 7,293,000 were imported.

In the manufacture of slack cooperage, used for the dry rough commodities such as lime, potatoes, apples, dry fish, flour and cereals, which predominate in Canada's products, elm is the principal wood employed, forming over fifty per cent of the total consumption. Spruce is rapidly coming into more general use as a source of stave supply, eleven million more spruce staves and nine million fewer elm staves having been used in 1911 than in 1910. When elm is exhausted birch will probably take its place, being comparatively flexible and available in great quantity.

Advice to Packers

R. M. Winslow, Victoria, B.C.

Wrap all number one and fancy fruit. Wrap number two's of winter varieties.

A good pack must first of all be firm. It must have a total bulge of about one and a quarter inches before the cover is nailed on. Regularity is essential to good shipping qualities, and honesty as well. The pack must be attractive in appearance.

The apple-box twenty by eleven by ten is suitable for all apples.

The square and offset packs are defective and should be avoided.

The diagonal packs meet practically all requirements.

Your fruit should not fall below the requirements of the "Fruit-marks Act" in any particular. Better keep your grades well above the law.

Mark the number of apples on the box, rather than the tier.

Apply the highest standards of perfection to your own pack. Be persistent in your effort to attain the highest standard. Then use your influence, as well as your example, to influence your neighbor and every other grower and shipper to do the same.

Douglas Gardens

Oakville, Ontario

Paeonies

67 varieties at... 30 cts. to $3.00 each

Irises

12 varieties at.....15 to 25 cts. each

Phlox

"Miss Lingard," 20 cts. each, 10, $1.50

Delphiniums

Gold Medal Hybrids,....15 cts. each, 10,.....$1.25

Aquilegia (Columbine)

Fine plants,....15 cts. each, 10, $1.25

Daffodils

Eight varieties, 20 cts. to 45 cts. for 10, 45 cts. to $1.00 for 25.

Carriage Prepaid on all of above.

FALL PLANTING LIST sent free.

JOHN CAVERS

Darr Farm, Niagara-on-the-Lake.

August 1st, 1911

"Regarding the large block of Pedigreed Cherries, Peaches, Pears, Plums and bush fruits we planted last fall, am pleased to tell you the results are in every way satisfactory. The few trees put in this spring do not compare with the fall plant, either in growth or take. We lost considerably more of the spring planted trees, and the growth is much shorter. In future we plant in the fall.

D. A. RODGERS

PEDIGREED CHERRIES, planted November 1910, 99 per cent. thrifty July, 1911.
The property of D. A. R. ROGERS, Darr Farm, Niagara

We strongly recommend the fall planting of all fruits excepting yearling plums, which are inclined to freeze back, and should be planted in the spring. Where the land is suitable and the work well done, fall planting has in every case proved more satisfactory than spring planting. Particularly is this noticeable this dry season. The land is usually in fine planting condition in the fall, the trees quite dormant, the weather cool, and more time can be given to plant carefully. Fall planted trees are well established by spring, and make a much heavier growth than spring planted orchards. These are a few reasons why fall planting pays.

Orders should be sent in early, and we are prepared to make quick delivery as soon as stock is thoroughly matured.

Auburn Nurseries, Ltd., Queenston, Ont.

Take A Handful Of "St. Lawrence" Sugar Out To The Store Door

—out where the light can fall on it—and see the brilliant, diamond-like sparkle the pure white color, of every grain.

That's the way to test any sugar — that's the way we hope you will test

St Lawrence Sugar

Compare it with any other sugar—compare its pure, white sparkle—its even grain—its matchless sweetness.

Better still, get a 20 pound or 100 pound bag at your grocer's and test **"St. Lawrence Sugar"** in your home.

ST. LAWRENCE SUGAR REFINERIES LIMITED, - MONTREAL.

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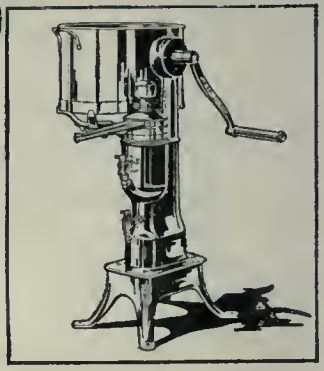
Both Cream and Skim Milk Are Delivered Pure and Clean

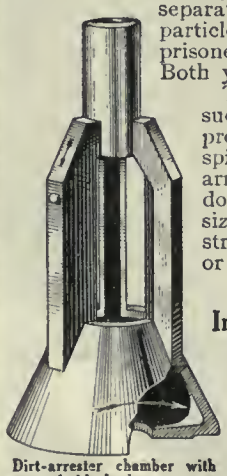


GOOD reasons are the basis of all buying. It follows then, that the best buyer is the man who has the best reason, or the most good reasons for buying. When this rule is applied to the purchase of a cream separator and each separator on the market is carefully studied for reasons why it should be chosen, the most careful buyers invest their money in

I H C Cream Separators Dairymaid or Bluebell

Assuming for the sake of argument that the best separators are equal in skimming capacity, simplicity, and durability, there is still one best reason why your choice should fall on an I H C separator. The reason is—the dirt arrester chamber which is found only on I H C separators. More or less foreign matter is very likely to find its way into the milk before it reaches the separator. The I H C dirt arrester chamber removes every particle of this matter before separation begins and holds it imprisoned until the last drop of milk has passed through the bowl. Both your cream and skim milk are delivered pure and clean.

There are points in the construction of I H C separators, such as the heavy phosphor bronze bushings, trouble proof neck bearing, cut-away wings, dirt and milk proof spiral gears, etc., which taken in connection with the dirt arrester chamber, make I H C separators beyond any doubt the best of all to buy. There are four convenient sizes of each style. Ask the I H C local agent for demonstration. Get catalogues and full information from him or write nearest branch house.



Dirt-arrester chamber with part of side broken away to show how the impurities are collected

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I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizers, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A

Nova Scotia's Fruit Growing Advantages

W. T. Macoun, Dominion Horticulturist, Ottawa, Ont.

For the growing of fruit, Nova Scotia has many advantages. In the first place, land is still comparatively cheap. The boom has not fairly set in yet, but I notice that the Canadian Pacific Railway, which controls the railway running through the Annapolis Valley, is advertising the fruit industry on its time tables. The government is doing a great deal now in advertising the fruit lands, and probably still more systematic advertising will soon take place.

Trees live to be a great age in the more favored parts of Nova Scotia. A man can easily count on productive trees as long as he lives, no matter how young he may be when he plants. Apple trees more than two hundred years old are said to be growing in the Annapolis Valley. The freedom from winter injury makes orcharding a safer investment than where trees are more liable to be injured.

The markets of Great Britain, Europe and South Africa should offer a constant and ever increasing outlet for Nova Scotia fruit, not to speak of other great markets nearer home, and as the fruit can be placed on ocean steamers the same day it is picked, if need be, there is a great advantage in shortness of railway haul. Both in regard to freight rates and to the condition in which the fruit arrives at port.

Owing to the comparatively cool summer and autumn, as a rule Nova Scotia fruit does not mature rapidly, and when it is picked is usually very firm and carries well, enabling the Nova Scotia fruit grower to land his fruit with a minimum loss from slack or wet barrels.

The climate of the more favored parts of Nova Scotia is very suitable for many varieties of apples most in favor on the British and European markets, such as Gravenstein, Blenheim, Ribston, Cox's Orange Pippin, Tompkin's King and others.

But I shall stop here, and lest I be thought to favor Nova Scotia too much, I must tell you that the apple scab flourishes there in some seasons as it does in some other parts of Canada; that sometimes cool weather in spring injures the bloom, causing a partial failure of the crop; that some varieties of apples do not reach full maturity there and lack high color, and that there are a few other minor troubles which every fruit district, no matter how good, is not exempt from.

Storage Houses Advocated

That British Columbia and Ontario produce fruits that meet the requirements of those who live on the prairies was demonstrated by the exhibits at the Winnipeg Exhibition recently. However, it is but little satisfaction to know that apples can be held in cold storage for several months if these cold storage plants do not deliver them to the consumers. Citizens of the west will pay almost any price for sound, mellow apples in winter, spring or early summer.

It is well-known that good varieties can be held over winter. Then why not have suitable storage houses built in Winnipeg and other cities of the west? Apples could be shipped in the fall and stored ready for trans-shipment as needed. Until Ontario or British Columbia have perfected such a system, they will not have taken full advantage of the willingness of the west to part with cash in an endeavor to get good fruit.—Winnipeg Farmers' Advocate.

Simmers' Bulbs

For Immediate Planting

WE WANT every reader of The Canadian Horticulturist to have a copy of our AUTUMN CATALOGUE, in which is offered the most complete and comprehensive list of bulbs to be found in Canada. It's free for the asking. To keep up-to-date floriculturally your name should be on our mailing list, and our various Catalogues will be sent as issued.

BULBS.—Thousands of people overlook the planting of Spring Flowering Bulbs in the Fall, and have many regrets when they see them blooming in the gardens of their neighbors in the spring. Send for our Catalogue now, make your selection and plant your Bulbs out before hard frost comes, or selection of sorts may be left to us.

HARDY PERENNIAL PLANTS.—No better time to set these out than now. They quickly take hold and invariably make finer and stronger plants than wehn planting is done in the Spring.

J. A. SIMMERS, Limited SEEDS, BULBS, PLANTS TORONTO, Ont.

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WHITE DUPLEX FRUIT WRAPPER

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Hanging Baskets, Ferns Pans, Etc.

We have a large stock of all sizes on hand, and can ship orders without delay.

Order Now Before the Rush

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Send for Catalogue & Price List

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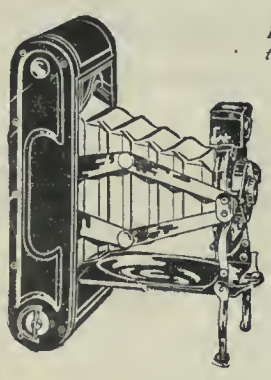

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Carefully tested meniscus achromatic lens, accurate shutter; daylight loading, of course. Made of aluminum, covered with fine seal grain leather. Kodak quality in every detail. Loads for twelve exposures. Pictures 2¼ x 4¼ inches. Price $12.00

Other Kodaks $5.00 to $100.00. Brownie Cameras, they work like Kodak, $2.00 to $12.00. All are fully described in the Kodak catalogue free at your dealers or by mail.

Canadian Kodak Co., Limited
TORONTO, CAN.

A Unique Display of Nursery Stock

FEW of the many thousand visitors at the Canadian National Exhibition who passed down the main roadway towards the Machinery Hall failed to notice the attractive little building pictured on this page, which was set back a few yards from the walk and was surrounded by a beautiful stretch of green grass, and around which were arranged in an artistic manner, attractive specimens of fancy evergreens planted in tubs and art stone vases. This was the exhibition of Messrs. Stone & Wellington, the well-known nurserymen and landscape architects of Toronto.

The evergreen shrubs shown in the foreground made a collection of rare and choice varieties of conifers, particularly interesting to lovers of the beautiful, and which included a number of varieties of the Spruce, Arbor Vitæ, Pine, Juniper and Fir.

The quaint little building in the background of a miniature formal garden made a unique and pleasing effect, which was enhanced by a well-set sun dial.

The building itself was used as an office, in which were shown illustrations of various shrubs, trees and roses, as well as a number of plans of private and public grounds, prepared by their landscape designer, who was in charge of this department, and who was able to answer many questions and enquiries in regard to the artistic and practical laying out of the home or public grounds.

Another feature of this interesting exhibit which attracted a great deal of attention from farmers and fruit growers were a number of bundles of their celebrated two-year-old standard grown fruit trees, consisting of apples, peaches, pears, plums and cherries. These trees were grown at their nurseries at Fonthill, and serve to show the splendid class of stock they are growing for their fall and spring trade.

Their nurseries are situated at Fonthill in Welland County, where conditions are ideal for the production of the very highest class of nursery stock. Their trees, grown under such favorable conditions, are straight, clean and well developed. These two year specimen trees shown stood from five to eight feet high, and a glance at their splendid root system and the remarkable growth that has been made during the past season shows that the trees were the kind which would establish themselves quickly when planted out in the orchard, and come into profitable bearing from one to three or four years ahead of stock which had not been grown under equally favorable conditions. Messrs. Stone & Wellington have for this fall and next spring an immense quantity of fruit trees such as those shown at the exhibition.

Those of our readers who, like our representative, stopped to look over this exhibit, no doubt learned much regarding the methods followed in producing high-class nursery stock, which well repaid them for the time spent. Those readers who are interested either in landscape architecture or in high-class fruit trees for the orchard, and who have an opportunity of calling at the head office of this firm at 49 Wellington St. East, Toronto, or of visiting their nursery at Fonthill, Ont., will be assured of a hearty welcome, and may count on learning much that will be of value to them. Those who may not have this opportunity may, by writing to the head office at Toronto, be placed in touch with the nearest Stone & Wellington representative, or will receive direct any information desired.

If these of us who are engaged in growing fruit in Ontario will rise to the dignity of the situation, and by every means in our power seek to put our product on the public market in such a manner as will remove every cause for complaint due to careless and indifferent packing and grading of what might otherwise be a high class produce, there is a bright future in store for the fruit growers of the premier province in the Dominion.

Special No. 25. Sent by Express for $2.50

A Collection of Six Desirable

HOUSE PLANTS

Send us $2.50 and we will forward by express, to your express office, this very choice collection of House Plants. We select these as the most desirable plants for you to buy, chosen from our large assortment; they are full grown plants, now in their flowering pots, healthy, thrifty and beautiful. Our regular selling price of these plants is $4.00. To make a large number of sales we give this lot, an exceptional bargain, for $2.50.

1 Choice House Fern, Ostrich Plume.
1 Choice House Fern, Bostonensis.
1 Splendid Kentia Palm.
1 Large Asparagus Fern.
1 Xmas Cherry (in fruit).
1 Fine Cyclamen.

Cultural directions for these plants will be found in our Catalog, which we mail free with this order.

THE HAY FLORAL AND SEED CO.

Seedmen and Florists

BROCKVILLE - - ONT.

Ginseng Growers Meet

The fifth annual meeting of the O.G.G.A. of Canada met in the Amphitheatre of the Women's Building at the Canadian National Exhibition Grounds. In the absence of the president, Rev. Mr. Martin acted as chairman. The secretary reported that one of its members, Mr. Murray, of Uxbridge, had suffered the loss of plants to the extent of four hundred dollars by some parties who robbed his garden at Utica, Ont. The society took the matter up and offered a reward of twenty-five dollars, provided that Mr. Murray supplemented it with a like amount for the apprehension and conviction of the guilty ones. To this sum a friend in Michigan has added ten dollars more. The officers were all re-elected.

An important feature of the meeting was a lecture by Prof. J. E. Howitt, B.S.A., of Guelph, on "Ginseng Plants and their Diseases," which was full of interest and very instructive. A copy of this was sent to the secretary for publication in THE CANADIAN HORTICULTURIST. The members asked many questions, which made the lecture very interesting. It was decided to ask the Provincial Government for a small grant for the purpose of assisting in further investigating plant diseases of Gin-

MAXWELL'S HIGH SPEED CHAMPION

The Wringer Board extends from the side, out of the way of the cover. This allows practically the whole top of the tub to open up—makes it easy to put in and take out clothes.

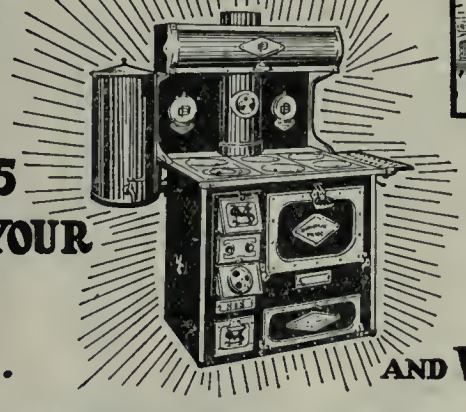
No other washer has as large an opening. No other washer can be worked with crank handle at side as well as top lever.

Do you use Maxwell's "Favorite"—the churn that makes quality butter?

Write us for catalogues if your dealer does not handle them. 89

DAVID MAXWELL & SONS, ST. MARY'S, Ont.

DIRECT FROM FACTORY TO KITCHEN



SAVE OVER $25 WHEN BUYING YOUR RANGE THIS FALL.

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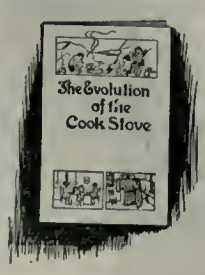
You Can Buy "DOMINION PRIDE" RANGE At Factory Price

Direct From The Largest Malleable Range Works in Canada

IF you want to save from $25 to $30, and at the same time get the most satisfactory kitchen range made, write for our Catalogue and look into the merits of the "DOMINION PRIDE," at from $41 to $49.

If we sold you identically the same range in the usual way, through a dealer, you would have to pay from $69 to $78 for it. You would be paying two extra profits—to wholesaler and retailer—which would add $25 to $30 to the cost of your range, but absolutely nothing to its value.



"The Evolution of the Cook Stove"

TELLS about cooking from the time the Cave Dwellers dropped hot stones into the pot to boil it. It also tells all about "Dominion Pride" Ranges. Whether you need a Range just now or not you will enjoy reading this book.

Write for Free Copy.

Besides costing much less than other ranges in its class, the "DOMINION PRIDE" is much more satisfactory. It is made of **tough, strong, malleable iron** and the **best blue polished steel**—materials which will **not warp, crack or break.**

The polished steel does not need blacking—simply rub it over with a cloth. With its cold rolled steel plate oven—sectional iron fire-box lining, with air chambers—and double-walled flues lined with asbestos—the "DOMINION PRIDE" is the most economical range you can buy. Actual tests have proved that it **saves over 30% of fuel,** burning either wood or coal.

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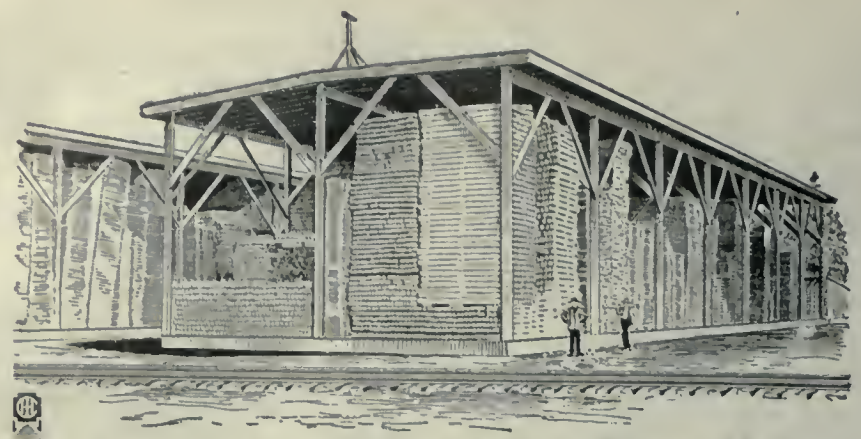
A "DOMINION PRIDE" Range, with high closet shelf and elevated tank or flush reservoir, with zinc sheet to go under range, 8 sections blue polished steel pipe and two elbows, will be delivered to any station in Ontario, Quebec or the Maritime Provinces for $41, or to any station in the four Western Provinces for $49—$5 to be sent with order and balance to be paid when the Range is delivered at your station. **If not convenient to pay cash we will arrange to accept your note.**

Canada Malleable & Steel Range Mfg. Co., Limited, Oshawa, Ont.

When writing it will be a distinct favor to us if you will mention this paper. 7



A Plain Statement of I H C Wagon Value

THERE is money saved for one farmer every time an I H C wagon is sold. Not because it costs less money to begin with, but because of the length of service it gives, an I H C wagon is the cheapest wagon you can buy. A new wagon costs you the price of so many bushels of wheat or oats, or so many bales of hay. The longer the wagon lasts the more you get for the original purchase price, and the cheaper your wagon becomes. That is why it is economy to buy the best wagon—one that will outlast any ordinary wagon. When you buy an I H C wagon

Petrolia **Chatham**

you invest in a wagon built of the highest grade material which experience and care can select or money can buy; built in the most thorough, painstaking manner, by skilled workmen, in factories which have modern appliances for doing work of the highest standard at the lowest possible cost. The conditions under which I H C wagons are built are nearly ideal.

All lumber used is air-dried in sheds with concrete floors. This insures toughness and resiliency. All metal parts are made of especially prepared steel, guaranteeing the longest service. Each wagon undergoes four inspections before being shipped so that it reaches the purchaser in first class condition, ready to be put to work at once and able to carry any reasonable load over any road where a wagon should go.

The I H C local agent knows which wagon is best suited to your work, will tell you why, and will sell you that one. When you see him have him show you all the good points of I H C wagons, and hear what he can tell you about the experiences of I H C wagon owners. You can get literature from him, or write the nearest branch house.

EASTERN CANADIAN BRANCHES
INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)

Hamilton, Ont. London, Ont. Montreal, P. Q.
Ottawa, Ont. Quebec, P. Q. St. John, N. B.

I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Bldg., Chicago, U S A

SMALL FRUIT PLANTS

Gooseberries, Josselyn, Red Jacket, Downing, Pearl, Houghton.—**Currants,** Perfection, Ruby, Cherry, White Grape, Lee's Prolific, Champion, Black Naples, Victoria.—**Raspberries,** Herbert, Cuthbert, Marlboro, Brinckle's Orange, Golden Queen, Strawberry-Raspberry.—**Garden Roots,** Asparagus, Rhubarb Write for Catalogue.

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I have Imported direct from the Growers A LARGE QUANTITY OF EXTRA CHOICE BULBS for House and Garden Culture. Extra Good Named Varieties for Bedding. It will pay you to get my prices. Write at once.

C. MORTIMER BEZZO, Bulb Importer, BERLIN, CANADA

READ

The man who reads these days is the man who knows. He is considered the successful man in his neighbourhood. Now is the time to add to your knowledge along horticultural lines. We have prepared a list of a few excellent little Books on Fruit Growing and Gardening. You may buy these books or get them free as premiums. Write for the list.

THE CANADIAN HORTICULTURIST, BOOK DEPT.

seng. The president and secretary were appointed a committee to attend to the matter. The secretary of the association is P. Wilson, 283 Evelyn Ave., Toronto, Ont.

British Columbia

In the Penticton district peach growers were kept busy this year harvesting the heaviest crop in the history of the district. The total output reached about one hundred cars. One-tenth of this amount was produced by the Munson ranch alone. It is owned by a well known Winnipeg lawyer who makes a side line of fruit growing.

The majority of the growers are shipping through local packing companies, and in this connection there is an element that is getting some criticism. The share which the packing company gets is considered to be out of proportion to what the grower gets. For instance in shipping peaches where seventy cents, f.o.b. Penticton, is secured the grower will only get half this amount. The selling commission of 10 per cent amounts to seven cents, the box cost one cent more and the charge for packing is 29 cents. The opinion is expressed that a co-operative organization would save money for the growers.

The Okanagan Fruit union are about to erect a large warehouse near the depot at a cost of $15,000. The Vernon Fruit company already have their own building.

The Creston Fruit Growers Union are shipping over one hundred boxes of apples per day to points on the Pass and are expressing large quantities of cob corn, pickling cucumbers, ripe tomatoes and different kinds of vegetables, which are in great demand.

Eastern Annapolis Valley, N.S.

Eunice Watts Buchanan

Owing to the fine quality of last year's apple crop, some of the leading growers did not spray as thoroughly this year as formerly, but now they are regretting it, as black spot was prevalent everywhere, except in orchards that had been well sprayed. Instead of covering the trees with a fine mist in spraying, as formerly, it is found that larger nozzles and drenching the trees give the best results.

It is now estimated that there will only be about one-half of last year's apple crop—perhaps eight hundred thousand to nine hundred thousand barrels.

Seeding down orchards with buckwheat and hairy vetch is fast going out of fashion; summer vetch and clover are succeeding them.

One grower shipped two hundred barrels of Crimson Beauty apples in the second week of August, and expected to ship two hundred more. Duchess number one realized $3 a barrel in the Halifax market. A lot of the early apples and berries were shipped to Sydney, C. B. Astrachan are fast going out of date.

Thinning apples is becoming more general. The fruit is thinned to about six inches apart, unless it promises to be number one. No two apples are allowed to grow together. Pears, plums, and currants are bearing down the trees.

Enclosed please find one dollar, for which send me THE CANADIAN HORTICULTURIST for two years, 1912 and 1913. This magazine is the one I cannot do without, as I always anxiously await its arrival and never put it down until I have read the contents, including the advertisements, which I find nearly as interesting as the other portion.—H. Wood, 608 Spadina Ave., Toronto.

APPLES WANTED

and FRUITS OF ALL KINDS

CONSIGNMENT OR F. O. B.

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BRANCHES: WINNIPEG REGINA OTTAWA

APPLES APPLES APPLES

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Fruit Importer and Merchant

NOTTINGHAM, ENGLAND

Solicits your consignments.
Write for particulars early.
Highest references given.

Telegraphic Address, Buckoll, Nottingham

APPLES APPLES APPLES

I have the pleasure of reporting nothing but satisfaction from those who consigned me apples last crop, and there is no reason, so far as I can see, why last season's satisfactory results should not be repeated on 1912 crop.

My best personal attention is offered to every shipper with every package consigned. Everything sold privately with prompt returns each time.

I have an increasing outlet for really good fruit.

Where there are no direct steamers from Montreal, ship via Liverpool or via Glasgow; through bills of lading can be got from any point in Canada.

Early advice of intended shipment will be esteemed.

JAMES MARSHALL
12 Regent Quay
ABERDEEN, SCOTLAND

Cables--HALCYON Use A. B. C. Code, 5th Ed.

We Solicit Your Consignments

Send for Shipping Stamp

Good Prices Always

For Your Fruit and Vegetables

OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto market, we have established branch warehouses with competent men in charge at **Sudbury, North Bay Cobalt, Cochrane and Porcupine.** In time of congestion on the Toronto market we have a ready outlet through these branches. We never have to sacrifice your interests.

Branch Warehouses: Sudbury, North Bay, Cobalt, Cochrane and Porcupine

H. PETERS

88 Front St. East, Toronto

References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.

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Established 1896
Cable Address:—Rhubarb, Manchester.

George Johnson

Fruit and Produce Broker

Smithfield Market, Manchester

CONSIGNMENTS OF APPLES SOLICITED

Takes charge at Liverpool, Manchester London, Hamburg, Havre

All Boxes or Barrels to be marked—

Geo. Johnson M/c

All correspondence and advices direct to Manchester, Head Office

Highest Possible Prices and Prompt Returns

What Is Soil Fertility? How Does It Interest You?

WHAT is soil fertility? Why is its lack considered so serious a matter? Why is it that authorities on better farming agree in considering it one of the most important questions requiring solution by farmers today?

The answer is found in the small average yield of farms in this country as compared with those of other countries where correct fertilizing is practiced, and in the rapidly decreasing quantity of available new land. There are two things that every farmer can do, both of which will make his farm more productive. One is to practice a proper rotation of crops; the other to buy and use an

I H C Manure Spreader Corn King or Cloverleaf

Every farm can be benefited by the use of an I H C manure spreader. It will distribute the manure in an even coat, light or heavy, as may be required. Manure spread in this manner does the most good to the soil at about half the expense and much less than half the work of hand spreading.

An I H C manure spreader is a scientific machine, built to accomplish a definite purpose in the most economical manner. It is constructed according to a well-thought-out plan, which insures the best work in the field with the least strain on machine or horses. To take one example of the thoroughness in detail, all I H C spreaders are so constructed that a reach is unnecessary. This construction allows the spreader to be managed handily in small feed lots, backed up to barn doors opening into narrow yards, or turned completely in its own length. Yet the absence of a reach in no way interferes with the strength or field efficiency of the machines.

See the I H C local agent or write the nearest branch house for catalogues and information.

CANADIAN BRANCH HOUSES:
INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)
At Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, N. Battleford, Ottawa, Quebec, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton

I H C Service Bureau

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U S A

Marking Packages

R. M. Winslow, Victoria, B.C.

I understand that this year some of our biggest shippers have adopted the practice of stamping on the end of the box the exact number of apples contained in it. This has a number of very important advantages:—

The purchaser, whether jobber, retailer, or consumer, prefers to have the number stamped, because he knows then exactly what size he is getting. If the apples are for the fruit-stand trade a glance tells him what price can be paid per box if they are to be sold at certain set prices by number. He sells by number, and wishes to buy in the same way. The consumer buying for dessert purposes, whether for his own use or for hotel use, also appreciates the information given by the number.

With the adoption of the diagonal packs the old description of apples by tiers is not now accurate. Under our present system some apples, such as two—three, five—five, (one hundred and twenty-five), are marked "four-tier," while in reality there are five actual tiers of apples. The two—three, six—six (one fifty), is marked "four and a half tier," but has five actual tiers. The two—two, eight—eight (two hundred) is marked "five tiers," and it actually does have five tiers of apples. The same anomaly occurs all through. The designation of tiers must soon be discarded as obsolete. The use of the number cannot come too soon. It is now used by the principal Washington and Oregon shippers.

The designation by tiers is just as misleading to the grower as to the consumer. Only a technical expert knows how to interpret his packs in the terms of "tiers." Our highest class shippers are taking up numbering this year.

The Dominion Government Bulletin recommends the following system:—

Tier	Number	Grade
		Variety

Below is a box marked as is the custom in the Okanagan. This method, for the sake of uniformity, is on the whole to be commended. The packer's number is placed in the lower corner. Any brand may be used. Where the shipper's brand is given the law does not require that of the grower, though usually the grower's name or number is stamped on, so that the fruit can be identified in case of complaint:—

Variety	Grade	Tier or Number
	Brand	
Packer's Number		Grower's Number

One of our advertisers, Mr. James Marshall, of Aberdeen, Scotland, writes as follows regarding market prospects: "You can report prospects of an excellent market as the indication for home-grown apples here is rather poor. There will be an excellent opening for early shipments of good McIntosh Red, Fameuse, or some such varieties."

When you see it advertised in THE CANADIAN HORTICULTURIST it's all right. Patronize our advertisers. They are reliable.

Nova Scotia

The United Fruit Companies of Nova Scotia, Limited, organized early for the work of the fruit-shipping season. Mr. A. E. McMahon has been appointed chief inspector. It will be his duty to examine fruit in warehouses, and in process of packing and placing on cars. Capt. C. O. Allen has taken charge of the shipping business at Halifax, looking carefully after the treatment accorded to the fruit from time of arrival of loaded cars until placed on board the steamers. Mr. John N. Chute will be sales agent in Europe, attending to the marketing of the fruit in Great Britain and in Germany. He left for Europe recently and was tendered a farewell banquet by his fellow growers.

Most of the apples hitherto exported from Nova Scotia have been shipped to two or three British ports only. This year there is to be a change in this respect. Arrangements have been concluded with brokers in twenty-eight of the larger towns of Great Britain to sell Nova Scotia apples. In this way extra freight charges and sometimes a double commission will be avoided. Similar arrangements have been made with brokers in Holland, Belgium, Denmark, Germany, and Newfoundland. This widening of the market will bring about an increasing demand for Nova Scotia apples. Farmers of the Annapolis Valley are therefore planting more orchards, finding that the fruit industry in Nova Scotia is a splendid investment.

Horticultural Exhibit at the Canadian National

The quality of fruit shown at the Toronto Exhibition is steadily improving year by year. Whereas on former occasions it was frequently not difficult to find faulty specimens, especially in the case of apples, it was difficult this year to find fruit with even small blemishes. The practice of spraying, which is becoming more general among all commercial fruit growers, and the increasing thoroughness with which this branch of fruit growing is being carried out, is having its effect.

While the quality was excellent and practically all classes of fruit were fairly well represented, there was not the same quantity of fruit on exhibit as one one or two former occasions. The backward season had much to do with this. Owing to the fact that more space was available for the horticultural exhibit this year, and also that cold storage facilities were provided for the more perishable fruit, the general appearance and arrangement of the fruit exhibit from the standpoint of visitors to the exhibition was much superior to previous years.

EARLY APPLES

The quality, as regards both size and coloring of the early varieties of apples, was excellent. The fruit was smooth, well formed and very clean and free from defects. The later varieties lacked coloring, but this was easily explained by the backward season. The box exhibits were well displayed and the individual boxes of fruit were well graded and the majority of them well packed. Practically all the boxed fruit, both apples and pears, came from the vicinity of St. Catharines and elsewhere in the Niagara District. A good range of varieties was shown in the plate exhibit. The cone collection was confined almost altogether to the early varieties, such as Duchess and Astrachan.

He Bought Her a 1900 Washer

ONE OF OUR READERS TELLS HOW HER HUSBAND LEARNED

What Washday Means to a Woman

DEAR EDITOR:—Most men have no realization of what "wash-day" means to a woman. My husband is one of the best men that ever lived, but he laughed when I asked him one day to get me a 1900 Gravity Washer. I told him it would wash a tubful of clothes in six minutes. "Why, wife," said he, "a washing machine is a luxury. And besides, there's no better exercise than rubbing clothes on a washboard. It's good for the back. I think we had better wait 'til we get the farm paid for before fooling away money on such new-fangled things as washing machines."

John's "Busy Day"

That settled it. I gave up the idea and kept right on washing in the same old way. I confess that I felt hurt, but I knew John had no notion how hard it was to do the washing for a family of five—three of them little tots. I am not very strong, and the washing, with all my other work, finally got the better of me. I had quite a sick spell, and after things had gone at sixes and sevens for nearly two weeks, I suggested to John that he had better do the washing. We couldn't hire a girl for love or money, and the situation was desperate.

So one morning he started it. My, what a commotion there was in the kitchen! From my bedroom I occasionally caught glimpses of poor John struggling with that mountain of dirty clothes.

If ever a man had all the "exercise" he wanted, my husband was that man! Couldn't help feeling sorry for him, and yet it made me laugh, for I remembered how he made fun of me when I hinted so strongly for a 1900 Gravity Washer. When he finally got the clothes done and on the line, he was just about "all in."

That evening John came to my room, and said kind of sheepishly—"What's the name of the firm that makes those washers you were telling me about?" I looked up their advertisement and found the following address:

K. L. MORRIS, Manager
THE 1900 WASHER CO.,
357 Yonge St. TORONTO, CAN.

That's all he said, but he lost no time in sending for their Free Washer Book. The book came in due time and with it an offer to send the 1900 Gravity Washer on thirty days' free trial. My husband jumped at the chance to try the Washer without having to spend a cent. "We'll have four weeks' use of the Washer anyway, even if we don't decide to keep it," he said! So he told the Company to send on the Washer.

It was sent promptly, all charges paid, and the 1900 Washer Company offered to let us pay for it in little easy payments. The next week I felt well enough to use it. It is the nicest Washer I ever saw, and it almost runs itself. Takes only six minutes to wash a tubful, and the garments come out spotlessly clean.

We were all delighted with the Washer, and wrote to the Company that we would keep it and accept their easy payment terms of 50 cents a week. We paid for it without ever missing the money and wouldn't part with the Washer for five times its cost if we couldn't get another just like it.

If women knew what a wonderful help the 1900 Gravity Washer is, not one would be without it. It saves work and worry and doctor's bills. Takes away all the dread of wash-day. I feel like a different woman since I have quit the use of the washboard. And if any woman's husband objects to buying one of these labor-saving machines, take a hint from my experience. Let the man do just one big washing by hand-rubbing on the old-fashioned washboard, and he will be only too glad to get you a 1900 Gravity Washer.

Anybody can get one on free trial, by first writing for the Washer Book.

Excuse me for writing such a long letter, but I hope, Mr. Editor, you will print it for the benefit of the women readers of your valuable paper.

Sincerely yours, MRS. J. H. SMITH.

Sprayers

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For Fighting Every Disease of Cultivated Plants

Knapsack, Pack Saddle or Horse Drawn Power Sprayers

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Central Nurseries, St. Catharines, Ont.

Have a Fine Assortment of

Trees, Vines, Plants, Ornamentals, Etc.

For Fall Planting

Mr. Caverly tells us the 700 CHERRY Trees sent him last Fall came through the Winter fine. Only lost ONE Tree. The finest lot in the Township.

Look over our Price List. No Agents.

A. G. HULL & SON

Southern Farm Facts

Land at $10 an acre up

Alfalfa makes 4 to 6 tons per acre; Corn 60 to 100 bu. All hay crops yield heavily. Beef and Pork produced at 3 to 4 cents per lb.—Apples pay $100 to $500 an acre; Truck crops $100 to $400; other yields in proportion.

THE SOUTHERN RAILWAY
Mobile & Ohio R.R. or Ga. So. & Fla. Ry.
will help you find a home in this land of opportunity. Booklets and other facts—free.
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DAISY APPLE PRESS

Used by all leading apple packers in Canada, United States and England.

Write for prices and complete information to—

J. J. ROBLIN & SON
Manufacturers
BRIGHTON, ONT.
Canada

SPECIAL NO. 26 Sent to your Express Office carefully packed, for **$5.00**

8 BEAUTIFUL HOUSE PLANTS
AND
100 Choice Winter Flowering Bulbs
All for $5.00

We stake our reputation on this Special Bargain. The most careful buyer cannot select better quality or get more for the money. The plants are all thrifty and healthy; of full blooming size, and such only as will do well in the ordinary home atmosphere. The bulbs are those that are sure to bloom and thrive and give delight to the inmates of the home all through the long Canadian winter. Send us $5.00 and we will express to you as follows:

PLANTS

1 Choice Ostrich Plume Fern.
1 Fine Boston Fern.
1 Splendid Chinese Primrose.
1 Beautiful Cyclamen.
1 Rare Begonia.
1 Fine Cineraria.
1 Strong Asparagus Fern.
1 Large Kentia Palm.

Our regular selling price of these plants will average 50c each, and some of them we retail at One Dollar each.

BULBS

12 Early Narcissus Paper White.
12 Early Roman Hyacinths.
12 Freesia Mammoth size.
(The above are for early Xmas bloom).
12 Dutch Hyacinths (all colors).
12 Choice Single Tulips (all colors).
12 Superb Double Tulips (all colors).
12 Double Daffodils, a choice assortment.
12 Single Daffodils, a choice assortment.
2 Chinese Sacred Lillies.
2 Bermuda Easter Lillies.

Cultural directions for these Plants and Bulbs are found in our Catalog, which we mail free.

The above bulbs will give continuous bloom until Easter. Catalogue prices of these bulbs is $4.00.

This Order is Not Good after December 15th.

THE HAY FLORAL AND SEED CO.
Seedmen and Florists
BROCKVILLE - - ONT

The British Apple Market

The first important consignment of United States apples was sold in Liverpool on September 6th, consisting of 1,070 barrels and 200 boxes of United States and 350 barrels of Virginian apples.

The condition on arrival, of the bulk of this parcel, left much to be desired even for early apples. That portion of the shipment which had been stored in the refrigerator landed in much better condition than the portion placed in the ordinary stowage, and consequently realized much better prices, the difference amounting to five shillings and seven shillings per barrel.

The demand was fair for anything in good condition. The prices obtained were as follows:

1,070 barrels United States apples: Gravensteins, 8s 3d to 17s 6d per barrel; Blush Pippins, 11s per barrel; Ramshorn, 12s to 12s 3d per barrel; Wealthy, 10s 3d per barrel; Rivers, 9s per barrel; Red Pippens, 9s 9d per barrel.

200 boxes United States apples: Wealthy, 6s 9d per box; Gravensteins, 6s 9d per box.

350 barrels Virginian apples: York Imperials, 15s per barrel; Yorks, 12s 9d per barrel; Ben Davis, 12s per barrel; Rebels, 13s 3d per barrel; Red Streak, 10s per barrel.

CANADIAN APPLES

The first arrival of Canadian apples were sold in Liverpool on the eleventh September, and consisted of some 230 barrels, chiefly of the Duchess variety.

The fruit landed in excellent condition, and was of good quality. The color of the No. 1's was good, the No. 2's lacking color. They met with a very fair reception. The following prices were obtained: 230 barrels Canadian apples: Duchess, No. 1, 21s 6d per barrel, bulk 21s 6d; do., No. 2, 13s 9d to 14s 3d, bulk 14s 3d.

A National Dish for Canada

C. D. Peart, Nelson, Ont.

The question was asked by a Spanish gentleman, what is the national dish of Canada? And the lady addressed had to answer, I do not know, really I never thought of one.

England has "roast beef," Scotland "oatmeal," Ireland "potatoes"; they also have "The Rose," "The Thistle," and "The Shamrock" as national emblems. We have our emblem "The Maple Leaf." Why should we not have a national dish also?

In thinking the subject over, my idea is that "The Apple" is one of the most staple and enjoyable of all our products, as it can be used in some form at every meal, and between meals as well. The matter was referred to at a meeting of the Burlington Women's Institute some time ago, but nothing was done in the matter. Might it not be interesting to have a discussion through the columns of the The Horticulturist, and have the opinions and suggestions of others?

Nelson, B. C.

Next year the Nelson, B.C., Improvement Association will again distribute rose bushes at cost price to residents of Nelson and district. R. Jarvis, the president of the association, reports that the distribution of these bushes, inaugurated this year, proved so successful in aiding in beautifying the city it has been decided to follow the same course next year.

In order that the bushes may arrive in Nelson early next spring, preparations for securing orders for the bushes are already under way and it is expected that many thousands will be taken up.

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HORTICULTURAL EXPERTS
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For the Canadian Climate
One of the largest collections in the world.
Catalogues all free.
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WE ARE INTERESTED
In New Varieties of Canadian Raised Fruit and invite growers to submit offers.
Gebrueder Gehlhaar, Baumschuler
JUDITTEN, OSTPR., GERMANY

WESTLAND'S HARDY PLANTS
I have a large stock of all kinds of hardy perennial plants. Catalogue tells all about them. Send for a copy now and order early. Early orders have the best choice of stock and varieties.
MALCOLM WESTLAND
Tambling Corner London, Ont.

Cold Storage Fruit Warehouse
Finest Apple Rooms in the Dominion for
EXPORT AND LOCAL TRADE
Special Rooms for All Kinds of Perishable Goods
THE CANADA COLD STORAGE CO.
LIMITED
53 WILLIAM STREET, MONTREAL

Send your consignments of APPLES to the Home Country to
Ridley Houlding & Co.
COVENT GARDEN
LONDON, ENGLAND
who specialize in APPLES and PEARS during the Season. Personal attention, prompt account sales and remittance
Correspondence invited

IRON PIPING BARGAINS
We have over 450,000 feet of slightly used piping just as good as new and first class for water, steam, heating greenhouses, construction, fencing, posts, etc., at 25 per cent to 50 per cent less than regular value.
NOTE THESE PRICES
DIAMETER 1-2 in. 3-4 in. 1 in. 1 1-4 in. 1 1-2 2 in.
Price per ft. 2c 2 1-2c 3c 4c 5c 7c
Also other sizes up to 10 inches.
Send us a list of the lengths you need and we will give you a special low price on the lot, cut and threaded, ready to put together. We also have enormous quantities of Wire Fencing, Belting, Pulleys, Cable Rails, New Roofing, Saws, Vices, Forges, Etc., at 25 per cent to 75 per cent less than regular value.
CATALOGUE ON REQUEST
The Imperial Waste and Metal Co. 99 Queen St. Montreal

The Canadian Horticulturist

Vol. XXXV NOVEMBER, 1912 No. 11

Cooperation in Packing and Selling Fruit

Dr. H. Johnson, Grimsby, Ont.

GROWERS must accept the principle that they cannot be allowed to judge and grade their own fruit. Human nature is too frail, and the strongest minded of us is sure to be somewhat biassed in favor of his own productions, opinions, or possessions. Those who deem themselves above giving way to personal bias are referred to Herbert Spencer's "Study of Sociology," in which the learned author expounds the theory that no one is capable of forming a fair and disinterested opinion on any subject whatever, so strong is the feeling of personal bias which creeps into all opinions, beliefs, sayings, and doings, no matter whether it is a business, social, political, theological question or what not.

This point requires particular emphasis, as is evidenced by what happened two years ago to a large organization in the Niagara peninsula. Some of the growers in this union had their fruit graded and packed at a central station. Others graded and packed for themselves. These latter, on their own statements, packed about ninety per cent. number one fruit and ten per cent. seconds. In the central packing house the grade ran about sixty per cent. number one and forty per cent. other qualities. But members who packed for themselves received the same price as those who had their packing done in the central station. Clearly this was very unfair; but apart from the unfairness it shows that it is impossible to guarantee the grade unless packing is done by those not interested in the sale of the fruit.

Large fruit may be attractive to the eye but it is not generally so well flavored or so succulent as a medium-sized specimen. Growers, therefore, should make a stand against the fetish worship of large-sized fruit. All fruit that is free from blemish and attains a certain size, not necessarily very large, should be classed as choice fruit.

A FAIR WAY

The fairest way of grading apples, and the same system would apply equally well to peaches, appears to be that practised by the Hood River Apple Growers' Union. The fruit is divided into two grades: Number one and number two (and culls). At Hood River they classify the grades as "Choice" and "Fancy." This classification is independent of size and applies to color, shape, appearance, and freedom from disease or imperfections. Number one fruit is properly colored and entirely free from disease or blemish. Number two fruit may not be properly colored, and it may possess not more than two stings or blemishes. It must, of course, attain a certain size.

Both classes of fruit are then subdivided on the basis of size in the pack, according to the number of apples which will fill the box. Each box of every grade then contains a fixed number of apples of a uniform size and quality. The boxes are sold as three-tier, three and a half tier, four tier, and four and a half tier, and the number of apples inside is stamped on the box. Both the square and diagonal pack are used.

This system is fair to all parties from the grower down to the public who finally consume the fruit. It is particularly convenient to the retailer who may sell by the pound or by the piece, it enables him to choose a grade that exactly suits his customers and the nature of his trade.

"Barnes" Vineyard, one of the Famous Vineyards in the Niagara Fruit District

—Photo by H. C. Goodman, St. Catharines, Ont.

It would be difficult to find a system better suited on the whole to either the grower or the purchaser. These, after all, are the only people to be considered; as the merchants, commission people, and other intermediaries are quite capable of looking after themselves.

A uniform pack of both apples and peaches throughout Canada on such a basis would satisfy all parties and would give the grower—what he does not always get—a fair percentage of the price paid by the public; while the latter when purchasing would know exactly what they were getting and would not be fleeced as they constantly are in the the large cities, especially in Toronto. Further, cooperative unions should advertise the price of fruit and make it known to the public where fruit can be obtained at its proper price. Much of the jobbery in the commission trade could thus be obviated, and producers and consumers brought more closely together.

The Railroad Worm*

Arthur Gibson, Assistant Entomologist, C. E. F., Ottawa, Ont.

THE apple maggot or railroad worm is responsible for considerable damage in certain districts of Quebec province. Recently it has increased conspicuously and is now more numerous than ever. In many Ontario orchards also the insect has been particularly prevalent. Owners of orchards where this insect occurs should not allow it to increase.

The life history of the insect is briefly as follows: The adult flies emerge during the latter part of June and during the month of July. It has been stated recently by Illingworth that the eggs are about three weeks in developing within the body of the female flies. When depositing the eggs the female, by means of her sharp ovipositor, inserts them beneath the skin of the apple and the young larvæ hatch within a week, the exact time varying according to weather conditions. The maggots at once begin to feed upon the flesh of the apple, making winding burrows through the pulp until they reach full growth in from a month to six weeks. These burrows, or tunnels, soon become reddish or brownish in color and are easily seen when the fruit is cut. It is owing to this habit that the maggot is called the railroad worm.

The female flies are each capable of laying three hundred to four hundred eggs, and a single apple may contain several maggots, the work of which, of course, causes it to ripen prematurely and fall to the ground. The small white maggots are difficult to detect when young, but as they become nature and the tunnels larger they can readily be seen. When the injured apples fall to the ground, the maggots soon leave them and enter the earth to the depth of an inch or so, where they change into brown puparia and in this state they pass the winter, emerging as flies the following summer.

GATHER FALLEN FRUIT

It is of the utmost importance that all fallen apples be gathered as soon as possible after they leave the tree. This should be done every day, if possible, or at least every second day. In this way the maggots will be secured before they leave the fruit. When the windfalls are gathered they should at once be got rid of in some way either by feeding them to stock or by burying them in a deep hole with not less than three feet of earth on the top.

In some orchards where the apple maggot is prevalent, pigs are allowed to run about from July when early apples which are especially susceptible to attack, begin to fall, until all the fruit is gathered. Cattle and sheep have also been allowed by some to pasture in the orchard when the fruit is falling, but there is an objection by many fruit growers to such animals, especially cattle, having the fredom of orchards. As the maggots work entirely within the apple, they cannot be reached by any of the poison spray mixtures which are used for insects which attack the foliage. Fortunately, the natural spread of the apple maggot is slow. The flies, when they emerge from the ground, do not apparently fly away to any distance, but remain in the immediate vicinity, and the females deposit their eggs in the apples on the trees nearest to where they have emerged. Recent experiments in South Africa and Italy have shown that the adult fruit flies can be poisoned by spraying the trees with a sweetened arsenical.

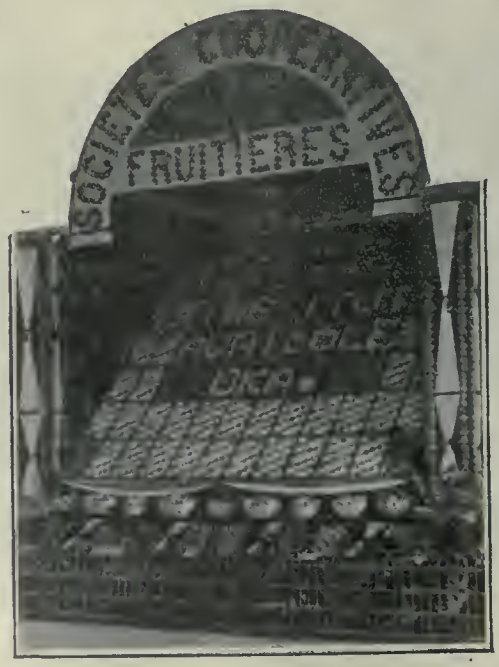
The flies, which are rather smaller than the house fly, are readily seen on the trees. They have two wings, each of which is conspicuously crossed with four black bands, which together somewhat resemble the outline of a turkey. The body, which is black, is crossed with bands of white, and there is a white spot in the middle of the back. Careful watch should, therefore, be kept for the exact appearance of the flies, and when they are seen it would be well worth experimenting to destroy the adults. In South Africa and parts of Europe, as above mentioned, poisoned baits have been used successfully against closely allied flies. For instance a mixture of sugar three pounds, arsenate of lead four ounces, and water five gallons, has been applied to the trees so that the solution would be deposited in large drops. It was found that the flies were attracted to the sweetened mixture which they readily ate and, of course, were killed.

In New York State, Illingworth reports that experiments were first made with arsenate of lead sweetened with corn syrup. The flies, it is said, fed greedily upon it, but were slow in dying. A soluble poison bait was then prepared as follows, and it is reported that it proved to be effective:

Water, forty-five parts; corn syrup, four parts; potass. arsenate, one part.

"About a pint of this was sprayed on the lower branches of a twenty-year-old tree. The burning from the soluble arsenate was of little consequence, for so few leaves were sprayed and the destruction of the flies was apparently perfect, killing them in less than thirty minutes after the first sip."

*Extract from a paper read before the Quebec Province Fruit Growers' Association.



Well Packed Quebec Province Apples

This excellent exhibit of apples was made at the Province of Quebec Exhibition by Rev. Father F. Leopold, of the Agricultural Institute at La Trappe, Quebec.

In pruning I believe in regular annual pruning. In this way it is never necessary to cut off any very large limbs. In fact it should be called thinning out of the wood rather than a pruning. I have never done much thinning, just enough to make me believe in the system. With such varieties as Baldwins and Wealthy it would pay to take off half the apples in order to make them bear annual crops. I intend experimenting thoroughly in this way this year by thinning out the apples on one side of the trees and leaving the other without thinning, and will note results.—W. H. Gibson, Newcastle, Ont.

Nitrogenous manures must be used with great care and their successful use depends on good judgment and the provision of a simultaneous supply of potash and phosphate.

Gathering the Apple Crop in the Orchard of Mr. Galbraith, Bayfield, Ont.

Commercial Fertilizers

Dr. J. B. Dandeno, Bowmanville, Ont.

THE use of commercial fertilizers has been one of the most baffling questions with which the farmer and fruit grower has had to contend. If the application of commercial fertilizers to the land had generally resulted in success, there need be very little said, because they have been in somewhat general use for a quarter of a century or more. It is easy to find farmers who are not loud in their praises of such fertilizers, and the reason is they have not always been a success. Millions of dollars are spent annually in the United States, and hundreds of thousands in Canada for commercial fertilizers, and it is safe to say that at least half of this large amount is wasted, not because the fertilizers have, or have not, certain elements in their composition, but because they are not always suitable to the land to which they have been applied.

There is generally an erroneous notion regarding infertile soil, exhausted soil, or over-cropped soil. The prevailing idea is that such soil is infertile because it lacks plant food (I have never yet met a man who could give a fair definition of "plant food") whatever that is. This is, in nearly all cases entirely wrong. Soil is infertile because of something it *has*, rather than because of something it lacks. Plant excretions are the chief cause of infertility, and it is in the decomposition of such material that the application of fertilizers of any kind proves of value. Commercial fertilizers may remedy such conditions but, in the majority of cases, they do not, hence a loss and waste of time.

To apply a commercial fertilizer with prospect of success at least, three things are necessary, First, a knowledge of the effect of the previous crop on the soil; secondly, a knowledge of the crop now to be grown and its relation to the excreta of the previous crop, and thirdly, a knowledge of the biology of the soil.

Up to the present these things are only very vaguely known, consequently the use of commercial fertilizers is more or less like the use of patent medicine. The defect is only occasionally remedied.

Moreover, many of the commercial fertilizers in the process of manufacture have been heated to a tempeature so high as to be destructive of all bacterial life. Such are of very doubtful value. In the sale of and in the inspection of commercial fertilizers, the chemical composition is usually given, i.e., so much phosphoric acid ,so much potash, and so much nitrogen, as if the value depended upon these things. The value depends chiefly upon whether the original bacterial life has been preserved, and whether the constituents of the fertilizer are favourable to the development of nitrifying bacteria of the soil, and to those organisms which prey upon plant excretions.

Certain fertilizers are adapted to certain crops and to certain soils, and the only way to find out which, is to try them by using them on part of the field so as to compare.

Another common error is that organic matter is taken in by the plant roots. As a matter of fact, roots absorb inorganic matter and water, but no organic matter, excepting possibly in the rarest cases or under the most peculiar circumstances. There is no question as to the benefit to be derived from barnyard manure, and this is not because it contains "plant food" (for you could carry in your vest pocket all the "plant food" that a load of barnyard manure contains), but because it always supplies abundant favorable bacteria and abundant nutritive material for them. It has also a neutralizing effect on all plant excreta and it produces in the soil a good physical condition relative to the water supply.

No mistake is made in applying barnyard manure or other excreta, but in buying and using commercial fertilizers, "patent medicine chances" are taken.

Setting Trees *

P. E. Angle, Simcoe, Ont.

The problem to be solved when setting trees is to set the trees straight and in their exact position in the cheapest possible manner; and to do it in such a way that the men doing the work cannot go wrong.

There are several systems which may be followed. Among these are the following:

Mark out the field with a plow by plowing furrows both ways and planting the trees at the intersections. This is a good plan for one man to work, but where a number of men are depended upon there is enough chance for error that the trees in all probability will be very uneven in the rows, because there is a space about six inches square at each intersection in which the tree may be planted. It is also difficult to plow a perfectly straight line through the field. This system is not recommended on a large scale.

The stake system and planting board is another method. By a system of sighting and measuring, a stake is placed in the position that each tree will occupy, and the planting board is used in order to have the tree in the position occupied by the stake. The system is subject to inaccuracies owing to the placing and replacing of so many stakes, and also entails a good deal of extra labor.

The sighting system is one by which a row of stakes, properly measured, is placed around the field and two rows at right angles to each other across the field. The position of the tree is then obtained by sighting in line with two stakes on at least two sides of each tree; that is, the two lines will meet at right angles where the tree is to be planted. This is a difficult method to get absolutely correct, and may require extra men to sight if those doing the planting are incompetent.

In the wire system the wire should be

*Address delivered at Short Course in Fruit Growing, O. A. C., 1912.

Packing High Grade King Apples in the Orchard of R. R. Sloan, Porter's Hill, Huron Co., Ont.

unstretchable or as near as it is possible to obtain that quality. A woven wire, composed of several strands of seventeen to nineteen gauge steel wire is recommended. It is also easy to attach the marks to this wire. A wire five hundred feet long is used and is marked by attaching a small piece of copper wire through the strands to mark the location of the trees. The wire is first stretched parallel to the first fence and the stakes are placed along it where the outside row is to go. The same is done parallel to the fence at right angles to the first and so on around the field, providing the ends and side fences of the field are parallel to each other.

A row is then staked across the centre of the field in the same manner to act as checks to accuracy. We then have three rows of stakes across the field one way and two the other way. Now stretch the wire at right angles to the three rows of stakes and proceed to plant the trees at each mark on the wire. In order to make the wire taut and secure, an anchor stake is used at each end and a block and tackle at one end to stretch it. The work of planting may now proceed across the field one row at a time, and each tree will come exactly in its place without any special effort of sighting by the planter. The wire should be remeasured after planting ten or twelve acres and any inaccuracies due to stretching corrected, which may be easily done with the movable marks.

Handling the Apple Crop

R. R. Sloan, Porter's Hill, Ont.

We use baskets for picking apples and find them more satisfactory than sacks, as the fruit is more subject to being bruised when sacks are used.

The fruit is packed in the orchard. It is brought from the trees and placed on a canvas bottomed sorting table and packed into barrels, which are drawn direct to the station. We have always plenty of fruit picked ahead and taken inside for wet days, so as to keep the men busy.

SELLING THE CROP

We have disposed of our fruit in different ways, often selling to a buyer, sometimes on the trees, but usually we prefer to pick our own fruit. We have consigned some shipments direct to the Old Country markets, have sold f.o.b. at our station and sometimes have shipped to the west. Having a large plantation we do not sell cooperatively, but it is the only way for the small grower to get the best returns for the crop.

So far, I have had the best results from selling my crop by the barrel in the orchard. The seller must be governed entirely by the condition of the markets, and the man he sells to, or he may not realize as much for his crop as by shipping it himself direct to the west or to a foreign market. I intend in future years, as the plantation becomes older and bears more fruit, to pack and ship the fruit direct to (or as nearly as we can) the consumer, and thus eliminate some of the middlemen.

Notes by Fruit Growers

The apple is an asset financially, morally, and politically.

Prune out twigs on which are the eggs of plant lice, tent caterpillar, buffalo laffer or other insects.

I am thinning out my apple trees from the top and leaving those limbs in the centre of the tree that are usually removed. I find that my trees are bearing a good crop throughout the tree and not on the outside, which is usually the case with apples.—J. O. Duke, Ruthven, Ont.

In pruning peach trees as well as in pruning any other fruit, it is necessary for best results that the operator have some knowledge of the variety, as some sorts require far more cutting than others. Such varieties as Barnard, Crosby, Golden Drop and others of similar habits require heavy pruning while those of the Crawford type require far less.—J. L. Hilborn, Leamington, Ont.

Greater skill in packing the fruit, and above all, more attention to the stowage of the packages in the cars, to secure rigidity during a long journey, and at the same time to allow for a free circulation of air among the packages, are quite as important as cold storage or cooling facilities. Unless these things are carefully attended to, any expenditure for pre-cooling purposes will be very largely wasted.—J. A. Ruddick, Fruit and Cold storage Commissioner, Ottawa, Ont.

I was the pioneer in the pure fruit business in Ontario. At the time I started the jam factories were making compound jams out of everything except pure fruit, but since I have started making pure fruit jam other factories have been forced to follow my lead and use pure fruits. During the past season I have manufactured two million pounds of pure fruit jam, thus providing a steady market. I bought 15,000 cases of strawberries, 10,000 cases of raspberries, as well as similar amounts of other fruits.—E. D. Smith, Winona, Ont.

Winter Protection of Plants

John Gall, Inglewood, Ont.

IF the ground is not ready for planting in the fall, or if it is desired to delay until spring, trees or bushes may be heeled-in, this being done by laying the roots in a furrow or trench, and covering with well firmed earth. Straw or manure may be thrown over the earth to still further protect the roots, but if it is thrown over the tops mice may be attracted by it, and the trees be girdled. Tender trees or bushes may be lightly covered to the tops with earth. Plants should be heeled-in only in loose, warm, loamy or sandy soil, and in a well-drained place.

Fall-planted trees should generally be well mounded up. This hilling holds the tree in position, carries off the water, prevents too deep freezing, and holds the earth from heaving. The mound is taken away in the spring. It is sometimes advisable to mound up established trees in the fall, but on the well drained land the practice is not usually necessary. In hilling trees, pains should be taken not to leave deep holes from which the earth was dug, close to the tree, for water collects in them.

It is always advisable to mulch plants which are set in the fall. Any loose and dry material, such as straw, manure, leaves, leaf-mould, litter from yards, and stables or pine boughs, may be used for this purpose. Very strong or compact manures, as that in which there is little straw or litter, should be avoided. The ground may be covered to a depth of five or six inches, or even a foot or more if the material is loose. Avoid throwing strong manure directly upon the crown of the plants, for the materials which leach from the manure sometimes injure the crown buds and the roots.

PROTECT ESTABLISHED PLANTS

This protection may also be given to established plants, particularly to those which, like roses and herbaceous plants, are expected to give a profusion of bloom the following year. This mulch affords not only winter protection, but is an efficient means of fertilizing the land. A large part of the plant-food materials have leached out of the mulch by spring, and have become incorporated in the soil, where the plants make ready use of them. Mulches also serve a most useful purpose in preventing the ground from becoming packed and baked from the weight of snows and rains, and the cementing action of too much water in the surface soil. In the spring, the coarser parts of the mulch may be removed and the finer parts spaded or hoed into the ground.

Tender bushes and small trees may be wrapped up with straw, hay, burlap, or pieces of matting or carpet. Even rather large trees like bearing peach trees, are often baled up in this manner, or sometimes with corn fodder, although the results in the protection of fruit buds are not very satisfactory.

It is of the utmost importance that no grain be left in the material used for baling, else mice will certainly be attracted to it. It should be known, too, that the object in tying up or baling plants is not so much to protect from direct cold, as to mitigate the effects of alternate freezing and thawing, and to protect from winter winds.

Plants may be wrapped so thick and tight as to injure them. Be sure that no water stands about the roots of tender trees, and cover the surrounding ground with a heavy mulch of leaves or straw. The labor of protecting large plants is often great and the results uncertain, and in most cases it is a question if more satisfaction could not be obtained by growing only hardy trees and shrubs.

SMALLER BUSHES

The objection to covering tender woody plants cannot be urged with equal force against tender or very low bushes, for these are protected with ease. Even the ordinary mulch may afford sufficient protection; and if the tops kill back, the plant quickly renews itself from the base, and in many plants—as in the hybrid perpetual roses—the best bloom is upon these new growths of the season.

Old boxes or barrels may be used to protect tender low plants. The box is filled with leaves or dry straw, and either left open on top or covered with boards, boughs or even with burlap. With woody plants these are generally laid down, but the main difficulty lies in getting them down to the ground.

Blackberries, raspberries, and so forth, which are intended for mulching, should be pruned in the fall so that no more wood than is really necessary need be covered. Then by digging away from one side of each plant with a spade and pressing down from the opposite side, the plants may be bent over without great difficulty. Plants laid down in the same direction each year are quite readily handled. If all the plants in a row are bent in one direction and made to lap over each other, less material will be required to cover them.

Other methods than those mentioned for winter protection of plants are frequently employed, but the foregoing are some of the common and most simple. A little time spent in preparing our plants for the winter may prevent considerable loss and disappointment.

Mulching Bulbs.—It is of advantage to mulch the bulb bed before the heavy frosts of winter set in, especially if the planting has been late, or tender bulbs have been planted. For this purpose fallen leaves answer well and are easily procured, over which a few evergreen boughs or heavy stalks should be spread to prevent their being blown about. The mulching should be removed early in the spring, or the bulbs will grow up into it, and be injured.—Rev. Jos. Fletcher, Millbrook, Ont.

Perennials are the backbone of the gardens in the Northwest and essential to them.

Canterbury Bells as Grown in the Garden of Mrs John Mero, Tillsonburg, Ont.

Protecting Roses

W. G. Mackendrick, Toronto, Ont.

It is a poor year that I do not dig up some new experience in rose growing. For five years I have been very successful with wintering climbing roses by just tying them together in a bundle against the wires of the fence and putting some bulrushes or straw over them to protect them from the sun, and I have been guilty of saying that this was sufficient covering for the Wichuriana type for this locality.

However, last winter we experienced very severe and prolonged cold, the thermometer dropping as low as twenty-eight degrees below zero, with the result that of the sixty odd climbers which I had been experimenting with none of the Wichuriana came through without being killed to within a foot or two of the ground. Only three climbing roses were hardy enough to maintain their eight or ten feet of height without killing back.

In previous years we had touches of ten below zero and the method I adopted of hilling up the earth around the neck of the rose and then tying the branches together and covering them with straw to keep the sun off them had been quite sufficient. Some of my neighbors who had Crimson Rambler climbers that had been exposed to the weather for ten years, and had wintered all right, last winter had them winter killed to within a few inches off the ground. The rose expert at the Guelph Agricultural College, Mr. Wm. Hunt, has had good success by laying the climbers on the ground and covering them with soil or a good heavy mulch of strawy manure.

I noticed last spring that a few of the branches that had fallen on the ground and were protected by the snow, came through all right at my place, so I think that one can do no better than to follow the example of the Guelph Agricultural College. The manure or litter should not be tightly packed as the average rose will stand cold down to at least zero.

Hemlock boughs will not do for a climber that runs away below zero. If you cannot cover the plants with earth the only thing left is strawy manure or dry leaves. Lay the plants down on the ground and place the straw or leaves around them so that the plant will get some ventilation but still be kept warm enough not to winter-kill badly.

I do not notice any difference in results between the roses I get from England and Ireland. They both seem to be grafted on the same stock and give about the same results.

Whether or not local roses are as good as those from England and Ireland, I cannot say. I purchased my roses in Ireland because they cost me about half what they would cost me if purchased in the United States, but the large bulk of the roses that are sold in the United States which are grafted, are imported from Europe.

The Foxglove—"Digitalis Purpurea"

Do not over-water geraniums or they will become soft. Let them dry out well between waterings.

The Ever Popular Geranium Blooming in an Office Window
—Photo by F. T. Shutt, Ottawa.

Potting Bulbs for Winter Flowering

Wm. Hunt, O.A.C., Guelph, Ont.

The best time to pot bulbs for winter flowering indoors is during October, although they may be potted later. All of the trumpet varieties of Narcissi, as well as the double flowering kinds, are suitable for pot culture. Two or three bulbs of these can be put into a five inch pot. Tulips are not usually satisfactory for indoor culture. Varieties best suited for pot culture are La Reine, white; Mons. Tresor, yellow; Coleur Cardinal, cardinal; Pottebaker, white; Chrysolora, yellow; Prince of Austria, orange red; Pottebaker, scarlet; Vesuvius, fiery red. These are all single varieties. A few good double varieties of tulips are Couronne d'Or, yellow; Murillo, pink; Rex ruborum, red; Tournesol, yellow. Five or six tulip bulbs can be put in a five inch pot.

Roman Hyacinths can be potted three bulbs in a five inch pot. The white flowering kind are the best of these, and can be had in flower by Christmas.

DUTCH HYACINTHS

The single flowering kinds of Dutch hyacinths are best for pot culture. Good quality bulbs give best results. Put one bulb of these in the centre of a four or five inch pot. A greater number of bulbs can be grown in larger pots or boxes if desired. Crocus, Scilla, Snowdrops and Chionodoxa do not give as good results for pot culture as those mentioned.

HOW TO POT

Pot bulbs in good potting soils. The top or apex of the bulb should be just below the surface of the soil when potted. Water them well and stand the pots away in a cool dark place, cellar preferred. Leave them there until a good root system has developed, which will usually be in four or five weeks, when they can be brought into the window to flower. If the pots are buried in moist sand or soil in the cellar they will root better than if left uncovered. Keep the soil moist after potting. The soil that bulbs are growing in should never become dry after potting, until they are through flowering.

Place one bulb of a Chinese sacred lily in a large deep saucer or dish. Fill the saucer with small gravel stones so as to keep the bulb in an upright position. Fill the saucer now with water and set it away in a dark cupboard or cellar for about three weeks, until a good root system has developed, then bring it out into the window to flower. Keep the saucer filled with water as required.

To grow Dutch hyacinths in glasses, set the bulb in a proper hyacinth glass. Fill with water so as to barely touch the base of the bulb. Place it away in a dark cool place for four or five weeks, until the roots touch the bottom of the glass, and then bring into the window.

Canadian Gardens---The Garden of a Workingman

George W. Tebbs, Hespeler, Ont.

IN a German county it is only natural to expect beautiful gardens. The thrifty, careful Teuton has received from his forebears a great heritage in his love of the beautiful, and in his habits of tidiness and orderliness. Hence it was no easy task to select a garden to illustrate in this series of articles from amongst the many well kept gardens in this little thriving town, where there are so many connected with the "Faderland." One well kept, typical garden, however, has been selected. It is that of Mr. E. J. Birken, the secretary of the Hespeler Horticultural Society, a position that he has held for the past three years, previous to which he was one of the directors.

Mr. Birken in Hiss Garden. Some of the Fruit Trees May be Seen

Mr. Birken holds a position in the woollen mills of the town and works ten hours each day. His gardening, therefore, has to be done either early in the morning, or late in the evening. Only a real love of gardening, therefore, can produce such an excellent example as is shown in our illustrations.

Nine years ago when Mr. Birken purchased his home, the garden was a bare, vacant lot. His fruit trees, now in full bearing, were all planted by himself, and the garden has been gradually brought to its present pleasing appearance by his own unaided labors since that time.

HAS WON PRIZES

Three years ago the Hespeler Society instituted prize awards for the best kept gardens and for cleanliness, variety and quality of vegetables and fruits, Mr. Birken was well up in the awards made by the judges. In the garden he has almost everything from tobacco to cabbage. He is justly proud this year of his Nicotina. He makes really good use of it, keeping it for spraying purposes, and using it also as a preventative of insect life in the nests of his poultry.

Mr. Birken has had marked success with his tomato plants. The way in which he grows tomatoes is as follows: He raises his own plants from seed, usually of the Plentiful or Earliana Varieties. He pricks them off into flower pots as soon as they are large enough, and places them in a cold frame. He never transfers them to the garden until about the fifteenth of June. In the garden there are all kinds of fruits. Mr. Birken is a great believer in spraying, and his trees are very clean and healthy. His cherry trees are full of fruit of excellent quality, and very clean. He has a particularly fine crop of Irish Cobbler potatoes which are growing on the sod of an old poultry run. There is practically not a weed of any size anywhere in his garden, and the arrangement of his plots cannot well be improved upon.

Great credit is surely due to men who under such difficult circumstances produce such fine work; who after a hard day's work in the mill, find time not only to beautify and enhance their own surroundings, but take pleasure in so doing and thereby give an incentive to the neighbors around them to go and do likewise, thus affording the cause of horticulture a real and valuable service.

Where the Vegetables Grow. Another View in Mr. Birken's Garden

Fall Planting Recommended

J. McPherson Ross, Toronto, Ont.

In the fall all that is necessary is to shorten the rose tops, say about one-third of the growth, when planting. Deep planting is still necessary. The tops assist in holding the mulching of strawy manure which must be provided, and also allow air to circulate. The stems are also sure to be killed back an inch or so by winter, and this dead wood when removed in the spring makes the plant properly shortened.

WINTER PROTECTION

All shrubs do better when planted in the fall than in the spring . The fall also is just the season for hardy perennials. In small fruits of all kinds, including strawberries, currants, gooseberries, and raspberries, you will have quite a yield in fruit next summer by planting in the fall. This is not the case with spring planting. Thus you gain a season by fall planting.

Orchid Growing for Amateurs*

J. A. Ellis, M.L.A., Ottawa, Ont.

NEXT to their beauty the strongest recommendation for orchids is that they remain such a long time in bloom. The blooms of those shortest-lived will last two weeks, and the flowers of the longer-lived ones are good for six weeks to two months. When we consider the comparatively short lives of nearly all other flowers this appears amazing. It will readily be seen that with a careful selection of plants it is quite easy to have lots of bloom all through the dull winter months.

A Five-year-old Cherry Tree in Mr. Birhen's Garden

See article on page 259

Very few people in Canada grow orchids. This can only be because few have tried to grow them. As I have pointed out, they are not expensive, are easy to grow, and give blooms which are unsurpassable. I doubt if anyone who has grown them will ever discontinue doing so. I have gradually discarded my other greenhouse plants, until now I have scarcely any but orchids.

Perhaps because these plants are not extensively grown in Canada I had to find out largely for myself what varieties were best for the amateur. I have in my time had many kinds; and as the result of some years' experience, can recommend those hereafter mentioned to the beginner. I have not space to describe these anything but shortly.

Cattleya labiata, C. Trianae, C. Schroderae. The Cattleyas are the finest of all orchids. They are those large beautiful pink and rose colored blooms which the florists sell. They grow two or three flowers on a stem. Cattleya labiata has a tendency to die out after a few years. There are many other varieties of Cattleyas worth growing, but the above are the best winter blooming varieties. There are a great number of hybrid Cattleyas, which are also very beautiful. Cattleyas will not bloom well unless grown near the glass.

Cattleya Citrina is an odd plant. It is grown on a board or a piece of bark, with moss around the roots. The bulbs and leaves will always grow downwards, no matter in what position it is placed.

Odontoglossum grande. This is a magnificent large chocolate colored flower with yellow stripes, growing five or so flowers on a spike.

O. Crispum and O. Halli are good. The Odontoglossums, however, find our summer a little too hot for them, and do not thrive quite as well as they do in England.

The Oncidiums suit the Canadian climate first-rate. Oncidium varicosum Rogersii is, perhaps, the best. It gives trusses of pure yellow flowers, with one hundred to two hundred flowers on each truss. Other good Oncidiums are: Forbesi, Tigrinum, Marshallianum, Crispum, Ornithorynchum, Concolor, Gravesianum, Sarcodes. There are many others as good or nearly so.

The Cypripediums (or Lady Slippers) are best grown on the bench. C. Insigne is the easiest to grow, as this class of orchid has perhaps been more hybridized than any other. There are thousands of varieties of Cypripediums, and a large number which the amateur can readily grow in a greenhouse such as I have mentioned. The flowers remain in bloom from six to eight weeks. Altogether I consider the Cattleyas and the Cypripediums the best orchids.

The Laelias are all easy to grow. L. Anceps and L. Autumnalis especially. L. praestans is also worth growing.

Vanda coerulea simply revels in all the air possible. It is a tall stem with short leaves growing from each side. The flower spike comes from the axis of a leaf. It has beautiful blue flowers, five or six on a spike, and blooms in summer.

Lycaste Skinneri can be readily grown, and it gives very beautiful large rose-colored flowers.

Laelio-Cattleyas are, of course, hybrids. The flowers are most exquisite, and are not hard to grow.

Denrobium Nobile is worth growing, and so is D. thyrsiflorum. The flowers of the latter are white and yellow, and grow in bunches like grapes. D. Wardianum is also good, but dies out in two or three years.

The amateur will make no mistake in cultivating any of the foregoing varieties.

A good half-dozen orchids for the amateur are: Cattleya Trianae, Cattleya Schroderae, Oncidium varicosum Rogersii, Odontoglossum grande, Laelia Anceps, Cypripedium insigne.

Another good six are: Cypripedium nitens, Laelia autumnalis, Oncidium Forbesi, Vanda coerulea, Lycaste Skinneri, Laelia praestans.

No doubt this list can be greatly improved upon. It is simply a short list of those orchids which, from my own experience, can be easily grown, and which should prove satisfactory.

I do not pretend, however, to have even begun to exhaust the list of those which an amateur can grow successfully. I have only mentioned those which I have grown myself without any great difficulty. The list is somewhat restricted, too, because I have included principally those which bloom in winter only.

It is, of course, impossible in a short article such as this to do more than touch the fringe of orchid growing, and the many lovely varieties of orchids. I have tried merely to show that this is a field into which the amateur need not be afraid to venture, and that many of the popular impressions about the difficulties and expense of orchid growing are fallacies. Those who venture into this field will, I am satisfied, like myself, wonder why it is that they did not go into it before. The wonderfully beautiful flowers which can be grown by the amateur makes it a most alluring field to enter upon.

Lovely flowers are the smiles of God's goodness.—Wilberforce.

Some liquid fertilizer should be given geraniums during the winter. "Bonora" is the best prepared fertilizer for window plants that I know of. It can be purchased with full directions at seed stores. —Wm. Hunt, O.A.C., Guelph, Ont.

*The concluding portion of an article, the first part of which appeared in the February, 1912, issue of The Canadian Horticulturist.

My Favorite Flower and How I Grow It*

Gladys Muir, St. Catharines, Ont.

NOVEMBER winds shrieked wildly at us, vainly trying to dissuade us from our purpose as we walked down the garden path. All in vain, however, for we continued our way to the goal in mind—a plot of ground which is exposed in mornings to the sunlight on the hillside. Here we thrust our fingers deeply into the light, worked-up soil and brought forth a handful of earth which we, looking like grave scientists, examined with critical eyes. Ah, yes, we had put in sufficient fertilizer, which in this case consisted of burned refuse of bonfires and wood ashes.

The loose soil was in ideal condition for planting, so we lifted from the depths of a large basket some two hundred curious round objects looking as if they were wrapped in white paper. What ugly things they were! "Bulbs," one called them. Better to have named them mummies, and this their burial service. For that is what we proceeded to do—bury them at a depth of four inches, and at intervals of six inches apart in holes we made with a light spade. We then packed the ground down flatly on top and over all placed a protection of leaves from the maple trees, dedicating the whole with a liberal sprinkling of wood ashes. "Dust to dust, earth to earth, ashes to ashes!"

Our task was o'er. Pausing at the home door, we glanced backward with satisfaction. How comforting the thought that yonder slept "not empty shells with the spirit flown,"—ah, no, in each was a life which waited only weary weeks for the magic wand of spring to set it free.

SPRING'S REWARDS

After months of rain and snow and bitter cold, April smiled. Then came the resurrection; peeping through the mulch of decayed leaves, the tender shoots of green appeared. Carefully we loosened the leaves around each to give them more freedom in growth. From now on the plants made pleasing progress, the result of the ash-fertilizer, which is par excellence as a promoter of rapid growth. Seldom indeed was the sprinkler brought into use, as the mulch of leaf-mold retained sufficient moisture.

At last came the reward of patience. Odd-shaped buds, topping graceful stalks, opened into pure white glories—and can one ever forget the wonderful essence which issued therefrom? Behold the lilies! Not even Solomon in all his glory was ever arrayed as one of these. My favorite garden flower! Symbol of purity the world over.

Independent, the lily requires practically no care, which is an ideal commendation to the lazy or indifferent novice. No spraying and trimming and weekly aphis hunts. The lily is above requiring such lowly aid. Her's is a brief but glorious reign. What millions pay her variations tribute in every land! Far better to hold a few weeks dazzling court than a whole season's intermittent court, as does her rival, the rose.

The lily! How the sight of her gladdens the hearts of our friends, both ailing and aged! Useful alike in decorating the bride entering upon life's threshold, and in consecrating the departure of the One whom the Angel of Death has blessed—a fitting tribute of God's treasury on all occasions is this flower.

And when the long autumn days shall come, and she withdraws with no assistance within the shelter of Mother Earth again, awaiting a coverlet of snow, how supreme in the hearts of all her lovers is the fair, white memory which blossoms as the years go by into increasing remembrances, for the lily cannot die.

The sweet pea of to-day is one of the most popular hardy flowers in cultivation, and is held in such high appreciation that it ranks quite on an equality with the rose and carnation in the esteem of many.

*One of the competing essays on this subject in the contest for prizes offered jointly by Messrs Hermann Simmers, Toronto, and R. B. Whyte, Ottawa.

Planning for Future Flowers

J. McPherson Ross, Toronto, Ont.

The difficulty in wintering biennial plants, such as hollyhocks and foxglove, with heavy foliage, deters some growers who have failed to winter them successfully. It is not so much the severe frost that does the harm as the alternate freezing and thawing, and the object is to keep them covered from the sun and at the same time to give air. Strong brush, such as old prunings or pine branches, are useful. Anything that will hold the leaves or dry litter and the snow, besides giving air, will winter these plants successfully.

A practical method and a sure one of wintering these flowers is to put stout pegs at the corners of the bed and on these stretch a layer of wire netting. Wire used for poultry netting is suitable. Place it the whole length, and have the netting raised above the plants at least a couple of inches. On the wire place a layer of leaves, then double your wire back again to hold the leaves in place. Thus you provide simply a mattrass of leaves, a sure, safe and dry covering from wind and sun, and allow the air to reach the plants and foliage, which otherwise would rot and die, or heave out.

If apples are stored in the cellar, it should be kept very cool or the fruit will not keep as well. Just above the freezing point is about right for keeping apples.

A Garden in Northern Ontario Which Shows What the North Can Do

The sweet peas here shown were grown in the garden of J. Lorne McDougal, Haileybury, Ont. They were seven feet high and loaded with a crop of long, well filled pods that contained nine to eleven peas each. The variety is the Alderman. This seed was sown June 3rd and the photograph was taken August 12th. The only fertilizer used was a little Muriate of Potash.

Grading and Labelling Vegetables

Paul Work, Cornell University, Ithaca, N. Y.

HAVING made the goods right by good grading, we must make them appear right by good packing. It does not take any longer to lay a specimen properly in place than it takes to lay it out of place. Experience makes experts at this, and a well finishel pack costs hardly a shadow more than one which shows a rough and uneven surface. You are doubtless interested in the cost of some of these things. For three summers I worked on a vegetable farm where a packing system had been established, making use of the Diamond market basket. Picking in the field cost a cent a basket, piecework. Grading and packing likewise cost a cent. Perhaps a half cent should be added for extra handling, making the cost from the field to the market wagon two and one-half cents a basket. During the worst glut that this market ever knew, an increase of one and one-half cents a basket was realized over the prices received by neighbors whose handling cost was as heavy or heavier. Moreover, my employer was moving five hundred baskets a day when others could hardly move any.

LABEL YOUR GOODS

Nothing adds more to the appearance of your goods than attractive and forceful labelling. I can best illustrate by example. Mr. Green Grocer 'phones to his commission house for a hamper of lettuce. It comes and it proves to be good. The packer had had good lettuce, and he has been careful, though he makes but one grade of his crop. Mr. Grocer wants more. Again he 'phones, and gets a hamper. This one looks just like the other, bearing on the top merely the address of the commission man and a number for identification. But this time he receives the produce of another grower who makes three grades. This basket contains the third. Next day Mr. Grocer goes down town, calls on his dealer, and sees the first grade from this grower, packed in a box, and well labelled. He sees his error and thenceforward orders the distinctive mark at an advance in price. This happens repeatedly with other grocers and growers. The poor lettuce has spoiled the trade in unmarked stuff, and all such passes for culls, or nearly so. The man with the label reaps the profit. What, then, is the use in doing the thing right if we do not bring the credit and the future sales and the future profit to the proper place?

BENEFITS OF LABELLING

California asparagus growers are successful in this. Their beautiful bunches are enclosed in attractive lithographed wrappers, and they held the market in our town last spring as well as in many others, though the price was high. Another plan has brought splendid returns to a New Jersey grower. He knows how to judge a watermelon, and takes advantage of that knowledge. Every melon bears a paster, printed in red, about an inch and a half by two and a half inches in size, bearing a guarantee of the quality. Just another example. A western New York lettuce grower declares on his label that it is his aim to pack nothing but perfect produce under that mark, and he asks the purchaser to report any imperfection to him. If such a label will not inspire confidence, nothing else will, and the people that buy vegetables are very different from those who buy other things. As I waited for a train at a small station last summer, I saw a neatly lettered crate of celery. The grower's name was there I did not know the grower, but I sent for a package of his product for use in an exhibition of marketing methods. I was not disappointed. His name gave me the confidence of which I have just spoken, because not many care to use their name in connection with low quality. This mark, I have since learned, is proving a great success in connection with a high-class order trade.

Thus we see that growers are learning the advantage of special marks and labels, but the process is slow. The shippers are in the lead. Many a box of high quality produce bears the name of the dealer, not the grower. The reputation is going to the wrong men.

When taking up celery plants in the fall leave the roots on and cut off a few of the loose outside stocks and any that may have got bruised or broken.—J. C. Black, Truro, N.S.

Mushroom Culture

Will you please give me information regarding the raising of mushrooms for the winter in the cellar.—Mrs. H. M'C.

Mushrooms will grow anywhere when given the proper materials. Dark, dry cellars not being used for anything else are ideal places, as are spaces under verandahs, or the prepared manure may be packed in boxes any size, so long as they are deep enough to hold eight or nine inches of manure. Old bureau drawers serve capitally for this purpose—in fact, there is no limit to their cultivation in places that may be convenient or that ingenuity can suggest.

To have certain success, procure if possible, the daily manure and sweepings from the stable, whatever quantity is possible, forking out the long straw, if any, and add a third of good garden soil to the manure, mixing it thoroughly, turning daily to prevent it heating too much, adding to the pile fresh manure and soil as you procure them till you have sufficient to make a bed four or five feet in width as long as you have space for it and when packed down to be not less than eight inches in depth.

MAKING THE BED

After the first rank heat has escaped, make the bed by placing the manure in layers, pounding it firmly. Pound it as you would pound the soil in setting posts; the more compact your bed is the longer it retains the heat, and the spawn travels quicker through it.

In locating your bed, do not put it on a cold floor or where any water would be apt to raise and be absorbed by the bed; in such a possibility raise your bed up four or five inches, and if made against a damp, cold wall, run some boards between.

When your bed is made put a thermometer in it and observe the temperature, which will raise to a greater or lesser degree; but when you notice it going down and about ninety degrees,

Harvesting Onions in the Grand Valley Gardens, Moose Jaw, Sask.
The onions here shown yielded 300 bushels to the acre, and sold for $1.50 to $2.00 a bushel. No fertilizer was used. The grower was Mr. Jas. Slater.

A Prize-winning Collection of Squash and Pumpkin

The vegetables here shown, some of which weighed over 100 pounds each, were grown by Jos. McClelland, Brookholm, Ont. They won numerous first prizes at the county show in Owen Sound in 1911.

place your spawn in it by making holes four inches deep, fifteen inches apart, and place the broken spawn in small pieces in the holes, covering the same.

THE TOP COVERING

A particular point in after-success is to wait after spawning for a week or ten days before you put the top covering of soil. Many growers are so impatient that they put the soil on too soon, the heating or fermentation going on in the new bed causes moisture or hot steam, and this must be allowed to escape, so that if the soil is put on before this occurred it would be retained in the bed and kill the spawn. This is the actual cause for the failure in nine out of ten cases in attempts to grow mushrooms and too much stress cannot be laid on these two points in growing them: The first, being careful not to spawn the bed until the heat is receding and is about ninety degrees or eighty-five degrees, and the second, not to cover with the top two inches of soil till eight or nine days have passed after spawning.

Then putting on the top two inches of soil, pat it down firmly and smoothly,and then place a layer of straw over your bed; though not actually necessary, it aids to keep the soil surface moist and prevents the air drying up the bed too quickly, and keeps a still temperature. The temperature to grow mushrooms should be fifty-eight and one-half degrees, and should not vary, but anywhere between fifty to sixty degrees will answer. I have succeeded in varying temperatures, but that is the proper, fifty-eight and one-half degrees; and that is why underground tunnels, sewers, or caves are utilized because the temperature can be kept so even. Following out the foregoing instructions, you should have plenty of mushrooms.—J. McP., Ross, Toronto, Ont.

Vegetables Under Glass

John Gall, Inglewood, Ont.

WHOEVER wishes to have success in beginning the forcing of vegetables under glass must have a love for the work and watch the developments so as to know when and how to feed them. Experience has taught us that some soils will take much more food than others. I claim there can be no hard and fast rules laid down in regard to how much fertilizer a certain crop shall be given for best results. My theory is that each grower in different localities, and different soils, by studying the condition of his growing crops, is the best judge as to how much food will be of benefit. I have little doubt there are various opinions on this one important question—feeding; but the grower who carves his own road, using his own discretion, will in most cases be the most successful. We know that to produce good crops potash, phosphoric acid, and nitrogen are a necessity. These should be applied to the soil in some form or another. Whoever has given this question study and deep thought will stand by his own good judgment. Self-taught experience is seldom forgotten.

TOMATOES

As a spring crop, tomatoes are becoming more and more popular with vegetable growers. The first ripe fruit is usually placed on the market about the end of May, when a high price can be procured. Good tomatoes can be had either in solid beds or raised benches, but I consider raised benches are decidedly to be preferred. The proper time to sow seed depends greatly upon the conditions that can be furnished for the growth of the plants. Tomatoes require a fairly high temperature, but if grown with the lettuce crop it will be necessary to sow seed early, about the beginning of December. The general practice followed in growing the plants is to sow the seed in flats and cover thinly with sand, then place a sheet of paper over the flat to retain the moisture. As soon as the seedlings become large enough to handle they should be transplanted into flats, keeping them about three inches apart each way, then again transplanted when they begin to show signs of crowding, and this time —to be economical—into quart berry boxes.

When large enough to plant into the permanent bed it is not necessary to remove the boxes, the roots readily find their way into the outside soil, and it is a much cheaper way than by growing in pots. Five or six inches of soil is sufficient to mature a heavy crop of fruit. Give air every available chance, never allowing the foliage to get soft and flabby, then there will be little trouble with mildew and kindred diseases.

LETTUCE

The demand for lettuce is ever on the increase. It is one of the main winter crops. Both for private and commercial purposes, monstrous houses have been erected for this industry within the past few years which probably before would have been thought utter madness. This crop is very often grown on raised benches, it being thought of much benefit having the plants near the glass, but this is a mistaken idea for a cool-blooded vegetable such as this. In the first place it is too hot for the roots; and second, the plants require too much water on the benches.

One great advantage in solid beds is the crops do not require water very often. In fact, if the surface soil can be kept on the dry side, provided there is plenty of moisture below, the roots will then have a tendency to work down giving the plants health and vigor, which is of the greatest importance for good results, but a thorough good watering when the plants become large will increase the size to a great extent. Airing plays an important part as regards success or failure with this ever popular vegetable.

RADISHES

Radishes are easily produced under glass. It has been stated that a crop of radishes may be taken from among other growing crops, but I consider that one crop is sufficient even if grown under glass. While radishes are of easy culture, it is true—I think I am safe in stating—that many of the radish crops have been destroyed by the erroneous impression that this vegetable needs little or no attention. If left in the bed too long they get soft and pithy, practically useless at that stage. The very best seed procurable should be used for this purpose. Radishes can be grown with every success in the lettuce house temperature.

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H. BRONSON COWAN, Managing Director

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We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words "I saw your ad. in The Canadian Horticulturist." Complains should be made to us as soon as possible after reason for dissatisfaction has been found.

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THE CANADIAN HORTICULTURIST.
PETERBORO, ONT.

EDITORIAL

SAN JOSE SCALE IN NOVA SCOTIA

The discovery in a small way of San Jose Scale in Nova Scotia has placed the fruit growers and Government officials of that province in a difficult position. The recent advent of the Brown Tail Moth, with the heavy expense that has been involved by the fight to secure its control, has revealed to the people of Nova Scotia the importance of adopting extreme measures where necessary to prevent the further spread of such pests and if possible to secure their eradication. It is gratifying to note that the fruit growers of Nova Scotia are awake to the seriousness of the situation, and that they are prepared to deal with it in a thorough manner.

Fortunately, owing to the severe climate of Nova Scotia, the San Jose Scale is not likely to prove as disastrous in that province as it otherwise might. When San Jose Scale first appeared in Ontario some fifteen years ago it caused a panic. Many alarming predictions were made. Few of these have come true. It is now known that the scale can be controlled by thorough spraying, and except in the tender fruit districts it has made little or no headway. Even in the tender fruit areas its spread might have been prevented had the Provincial Government dealt with the situation at the outset with courage. It should have appointed provincial inspectors and given them power to destroy infested trees. Instead, it made the mistake of leaving the enforcement of the law in the hands of local officials that township councils were given power to appoint. Some councils appointed inspectors. Others did not. A large proportion of the inspectors thus appointed were not competent. The result, as might be expected, was that the scale spread. The fact, however, that the area in which it is prevalent is confined to portions of the Niagara peninsula and the southern counties of the province shows that it is not as dangerous in the colder districts, including those where apples are grown, as was at first feared.

Most of the nursery stock used in Nova Scotia is grown in Ontario. This, of necessity, must continue to be the case for years to come. We understand that one of the measures for preventing the further introduction of the scale in Nova Scotia that is under consideration is the establishment by the Provincial Government of inspection and fumigation stations at Digby and Truro and of requiring all nursery stock from the western provinces to pass through these stations. This suggestion has much to commend it and yet it should be given very careful consideration before it is adopted if such action becomes likely. In spite of the testimony to the contrary by certain Government officials in British Columbia, the inspection of nursery stock in that province has not proved entirely satisfactory. For various reasons not connected with the character of the stock it has driven all eastern nursery stock out of that province and forced the local growers to depend largely on the less hardy stock grown in the Pacific coast states, although many of them, especially those living in the more eastern part of the province, would like to be able to obtain the Ontario grown stock.

Three large nurseries in Ontario furnish approximately ninety-eight per cent. of the nursery stock shipped from that province to Nova Scotia. Under more favorable conditions they might also furnish a large proportion of the stock imported by the fruit growers of British Columbia. We are inclined to think that the Dominion Government might well be asked to assume responsibility for the thorough inspection and fumigation of all this stock at the nurseries. The officials appointed to look after the work might be subject to approval by the Provincial Governments interested, and the expense be shared between the Dominion and the provinces. This would avoid double fumigation and handling of the stock which always proves expensive and disastrous to the quality of the stock.

The situation is full of difficulties. This makes it all the more important that it shall not be dealt with finally in undue haste. We would like to see arranged a conference between the various Provincial and Dominion Government officials interested as well as by representatives of the other interests affected.

SEND DELEGATES

During the next few days the horticultural societies of Ontario will hold their annual meetings. Shortly afterwards will take place the annual convention of the Ontario Horticultural Association. Every horticultural society in Ontario should arrange to send one or more delegates to this convention.

Most horticultural societies are short of funds. Sometimes this leads them, while considering their own needs, to forget their duty to the central organization. This is unfortunate. Twice now the provincial association has succeeded in securing material increases in the Government grant to the local societies as well as important amendments to the act under which they operate, which have enabled them to prosecute their work to better advantage. The reports of the discussions at the annual conventions, which are distributed by the Government, are full of interest and value. The local societies will promote their own best interests if they make it a point to be represented at the approaching convention of the provincial association.

A VALUABLE REPORT

As we anticipated that it would, the report on fruit conditions in Canada, by Mr. W. H. Bunting, of St. Catharines, copies of which are now being distributed, proves to be a document that has been needed for some years. At the request of the Dominion Minister of Agriculture, Mr. Bunting recently made a thorough inspection of fruit growing conditions in all our provinces. He has summed up conditions as he found them in a thorough yet impartial manner. The report is lengthy, well illustrated, and full of interest.

While the report contains little that was not well known to many yet it is the first time that the information it contains has been gathered together under one cover. Its greatest value will be for distribution among those people, largely in Great Britain, who think of coming to Canada to take up fruit growing. Hitherto these people have had to rely on such reports as they have been able to obtain from provincial sources or through local land agents. This information often has been colored and misleading and in no case has it been complete. Hereafter, these people will be able to learn through this report just what advantages each province has to offer and to profit by some of the warnings it contains. Both the Dominion Government and Mr. Bunting are to be congratulated upon the

successful culmination of the thorough investigation that was made.

Only those who enjoyed the pleasure of a personal acquaintance with the late Prof. John Craig, of Cornell University, at one time Dominion Horticulturist, and who knew what he had accomplished as well as something of his plans for the future, can appreciate what the horticultural interests of the continent have lost by his death. Possessed of unusual ability and personal charm, Professor Craig had the faculty of accomplishing practical results. The appreciation of his life and work, written by Mr. W. T. Macoun, of Ottawa, that appears in another column will be approved by all who knew him. While the late Professor Craig had been ailing for some years his death was so unexpected it was some weeks before it became known to those not in close touch with the family.

Again this year, as they have in the past, apple packers in Ontario, and we presume in other provinces as well, have packed and shipped immense quantities of immature fruit. Already much of the fruit has gone forward to the British market, and the results can only be unfortunate not only to the final purchasers, but to the fruit interests of the Dominion as well. It would be well if the provisions of the Fruit Marks Act could be extended to include practices of this character. The extension of cooperative packing among the growers is helping to reduce the extent of this evil, but it is still of such proportions, and likely to remain so for some years, that it would be well to have action of some kind taken to prevent it as far as possible in future.

We trust that the members of those horticultural societies which do not now subscribe for The Canadian Horticulturist for all of their members will remember, at their approaching annual meetings, to urge their officers to subscribe for The Canadian Horticulturist for the coming year. About three-quarters of the societies now take The Canadian Horticulturist for all their members. They find that the paper is not only a great aid to their members, but that it helps to obtain new members. Then, also, The Canadian Horticulturist is the only paper of its class in Canada. For that reason alone it should be supported by our Canadian societies.

CHRISTMAS

Next issue (December) is our Christmas Number. Plans which are now under way assure us that this issue will be one of unusual interest to our readers. Special articles are being prepared which will make a fitting close to a year wherein much progress has been made along horticultural lines, and a year wherein Canada's national horticultural journal, The Canadian Horticulturist, has made new records in regard to numbers of subscribers, amount of advertising carried, the adoption of new features and general improvement in the Magazine, and in the quality of the special articles and general information given.

We hope to make our Christmas Number the best of the special issues published this year. It will have a new and attractive dress, (we are having a special cover prepared for this issue), and will number among its contributors many of the big men of the horticultural world in Canada. It will be an issue which our readers will want to keep, both for its attractive appearance and the quality and real live interest of the information contained.

If you have goods to sell which will interest a progressive and well-to-do class of readers, who read The Canadian Horticulturist, because they are vitally interested in the information it contains, it will pay you well to use this Christmas Number. Advertising in The Canadian Horticulturist, this Fall, is exceeding all previous records. Experienced advertisers know that the best mediums to patronize are those in which business is good.

(We do not admit advertisers to our columns except such as we believe are thoroughly reliable.)

PUBLISHER'S DESK

Our aim has always been and still is to make The Canadian Horticulturist your favorite paper. We endeavor to publish just the articles and to print only such illustrations as will interest and help the largest percentage of our readers. That we are succeeding is shown by the many letters we receive from subscribers telling how The Canadian Horticulturist has helped them by giving just the information they wanted, and just at the right moment. Others tell us about new ideas they have obtained through The Canadian Horticulturist which, when worked out, have been a source both of pleasure and profit. Subscribers have frequently told us that information contained in a single issue has been easily worth to them the price of a full year's subscription, and often many times that amount.

Another evidence we have that our readers are pleased with The Canadian Horticulturist is the rapidly increasing number who when renewing their subscriptions pay for the paper for two years instead of one. During the month of September, one of our good subscription months, the two year renewal subscriptions outnumbered the one year subscriptions nearly five to one, the two year subscriptions numbering nearly eighty-three per cent. of the total number of renewals for the month. The record for other months is almost as good. This large percentage of two year renewal subscriptions proves that those who have been getting the Canadian Horticulturist and know what it is like, are pleased with the information it is giving them.

This is as we would have it. But we realize that there are ways in which The Canadian Horticulturist can be made of still further interest and value. As this year draws to a close we are laying our plans for still further improvements. In this connection it is fitting that our readers be given a special invitation for an expression of opinion as to just what improvements they as individuals would most like to see made during 1913. Won't you give it? Be specific. If you would like to see more information on fruit growing, tell just what kind of articles you would like to see added, and suggest two or three subjects on which you would like to see articles published during the coming year. Similar information is desired for our flower and vegetable departments. Has there been some information you have looked for recently and have not found? What was it? How do you like our articles on Canadian gardens? Would you like to see them continued or the space given to other information on flower growing? How did you like the three new covers on our February, April, and September numbers? Which did you like the best, the colored or the plain illustrations the full size of the page? Give any other suggestions as to how The Canadian Horticulturist could be made of greater interest and value to yourself personally. There will be many valuable suggestions which we can act on during the coming year. Now is a good time to offer your suggestions when we are planning our programme for the coming year. We will welcome your letters.

Next year we purpose increasing the amount of reading matter in The Canadian Horticulturist. As to how this will be done we have not as yet decided. It may be done by increasing the number of pages or by using a different style of type that, while not detracting from the appearance of the page, will increase the amount of reading material it contains. When we explain that to add only four pages of reading to each issue of The Canadian Horticulturist owing to our now large circulation would involve an expenditure on our part equal to all the revenue that would be obtained from approximately two thousand yearly subscriptions our readers will see that the matter is an important one to us. We intend, however, doing that which will be in the best interests of all concerned, and we anticipate that our final decision, when it is announced, as it will be soon, will be a welcome and pleasing one to the readers of The Canadian Horticulturist.

We hope that you are telling your friends who are interested in fruit and flowers about the great value of the information you are obtaining through The Canadian Horticulturist. Are you? If so, you are helping us to reach the point where still further improvements will be possible.

A Nova Scotia Appointment

Mr. Robert Matheson, Ph.D., Cornell, at present Assistant Professor of Biology at Cornell University, Ithaca, has been appointed Provincial Entomologist for the Province of Nova Scotia and Professor of Zoology at the Nova Scotia Agricultural College. Mr. Matheson is a native of Pictou county, Nova Scotia, and graduated from the School of Agriculture under the management of Prof. H. W. Smith.

After taking his Master's degree at Cornell, Mr. Matheson for two years occupied the position of State Entomologist for North Dakota. Returning to Cornell, he took his Doctor's degree with high honors, and was immediately appointed to the staff of that institution. Dr. Matheson will teach the subjects of zoology, including entomology, at the Agricultural College, but the greater part of his work will have to do with the investigation of entomological problems in the province of Nova Scotia and the administration of various measures for the prevention and extermination and control of insect pests.

Enclosed you will find $1.00 for two years subscription to The Canadian Horticulturist. The instructions you gave in the April, 1912, Number, on how to trim young fruit trees was worth the two years subscription. —Harry Shore, Byron, Ont.

NEW ONTARIO EXHIBIT

The Department of Agriculture of the Province of Ontario have equipped a demonstration car with roots, grains, vegetables, grasses, etc., of Northern Ontario, and the itinerary is as follows:

Toronto	Oct. 19, 21 and 22
Claremont	Oct. 23
Burketon Jct.	Oct. 24
Peterboro	Oct. 25
Norwood	Oct. 26
Havelock	Oct. 28
Central Ont. Jct.	Oct. 29
Ivanhoe	Oct. 30
Tweed	Oct. 31
Ardendale	Nov. 1
Mountain Grove	Nov. 2
Sharbot Lake	Nov. 4
Maberly	Nov. 5
Perth	Nov. 6
Smith's Falls	Nov. 7
Winchester	Nov. 8
Chesterville	Nov. 9
Finch	Nov. 11
Avonmore	Nov. 12
Apple Hill	Nov. 13
Vankleek Hill	Nov. 14
Caledonia Springs	Nov. 15
Ottawa	Nov. 16 and 18
Renfrew, G.T.R.	Nov. 19
Douglas	Nov. 20
Eganville	Nov. 21
Golden Lake	Nov. 22
Killaloe	Nov. 23
Wilno	Nov. 25
Barry's Bay	Nov. 26
Madawaska	Nov. 27
Whitney	Nov. 28
Rainey Lake	Nov. 29
Scotia Jct	Nov. 30

Top Grafting Apple Orchards

Wm. Welsh, Kincardine, Ont.

FOR eight or ten years I have been earnest in advising the planting of orchards and renovating old ones, by proper trimming and top grafting. This Lake Huron district is destined to be equal, if not not superior, to any other tract of land in Canada, for well flavored and good looking fruit. What is wanted is suitable kinds and proper attention, comprising cultivation, spraying and fertilizing, or perhaps I might better say manuring, for trees require moderately rich ground to bring fruit to perfection.

In a letter by A. McNeill, regarding top grafting on Tolman Sweet, the writer casts a little doubt upon the benefit derived. Probably in a sense he is correct, but there is one point in grafting on Tolman stock that I have never seen mentioned, and that is the matter of having the stock comprising from six to eight feet of stem of Tolman, and beneath that stem we know not what the root may be. It may be a hardy and thrifty root, sending a vigorous growth to the grafts on top, or it may be the opposite.

A thrifty Tolman will develop a better tree than the average root, but how can it be obtained?

In general, grafting for nursery stock, the roots are grown from seed, and the small apple plants are taken up, and a scion whip grafted below the line of the surface, which may be easily known by the grafter.

The scion, if of proper quality and cut, is quite likely to form roots, if placed deep enough in the nursery row, and if the soil is of that nature that it will encourage the formation of roots from the scion. Thus in time we might have a Tolman root on a Tolman stock. If this is so, we have the grandest top in time that can be got, unless it may be the Tetofsky.

After the head is formed, the time to put on the grafts is during some of the warm days of spring, before the bark is too loose, and there will be a strong head at the trunk, where there is little danger of limbs breaking and destroying the tree.

For trees whose limbs are liable to split off at the crotch, nailing or bolting is usually recommended. It is not always wise to tie wire around, although I have seen some doing fairly well, but there is danger of injury to the trees by wiring. It is said that the Portugese of the Pacific slope in California have adopted a practice of using the living tree for stays and braces, not by cutting props to hold up the overladen branches, but by grafting the branches amongst themselves in such a way that these grofts act as braces or guys.

To illustrate: Before the tree is overgrown, this system is begun by a careful study or an understanding of the requirements some years hence. Having decided where these strengthening grafts are required, two thrifty sprouts are taken, at opposite points from whence this living cable is to start. These two twigs are brought together and twisted round each other and tied if found necessary. In many cases these two branches will grow together without further care, making a substantial living support while the tree lives. If it is thought necessary the join-

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ing of these sprouts may be helped by artificially grafting them together, which may be done at some point of contact by cutting through the bark of both branches and tying firmly together, and applying wax as in regular grafting. To keep trees from splitting down the trunk, sprouts are taken in the same way from limb to stem, making a solid wooden contact that cannot be split.

The advantages of the living props and guys are that it lessens the injurious effects of heavy winds by checking the switching of the limbs, and consequently much of the bruising of the fruit, and that they (the props) never slip out of place, nor are the least unsightly.

In regard to Tolman stock, to top graft upon, the stem is clean and healthy, and if it is made to develop roots at the bottom or happens to be on as thrifty a bottom, then there will be a growth that. with proper pruning, will develop fruit on younger trees. Take our best apple when the tree has come into bearing (I mean the Northern Spy) upon its own stock, it is from ten to fifteen years before bearing and often twenty years before a fair crop is harvested, but when top grafted on a Tolman, bearing trees may be obtained many years earlier, especially if grafts have been taken from well-known bearing trees and from bearing branches.

By top grafting the quality and appearance of the fruit of the parent tree may be known. This, then, is a worthy consideration, for a full grown tree is a valuable product, the real profit of which may exceed that of the best cow on the farm.

To wait for so many years before realizing a profit, or even knowing whether the fruit is what was ordered or even of good quality, should make every one pause and think before planting an orchard.

John Craig, M. S. Agr.

Late Professor of Horticulture, Agricultoral College. Cornell University, Ithaca, N. Y

The recent death of Prof. John Craig is deeply deplored by his many friends. Those

The Late Prof. John Craig

Douglas Gardens

Oakville, Ontario

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"One Dollar" 3 varieties, **$1.00**
"Norlake" 10 varieties.. **3.50**
"Douglas" 10 varieties.. **6.00**
"N.W. Special" 7 varieties **5.00**
"Ten—for Ten" 10 varieties **10.00**

Phlox

"Miss Lingard,".... **20c.** each.
10 for **$1.50**

JOHN CAVERS

Announcement

The Auburn Nurseries of Queenston and Simcoe, formerly operated by Mr. W. O. Burgess, have been transferred to the *Auburn Nurseries, Limited.* Mr. Burgess remains with the Company as a large shareholder, and will fill the position of Managing Director. The plant will be very greatly extended. The Company has lately purchased one hundred acres of fine land in the Oakville district, which will be devoted to high class Ornamentals and Landscape material.

The Auburn Nurseries Limited has a full stock of high class Nursery stock to offer you, and believe that their line of trees is the finest that can be obtained. All orders and enquiries for stock should be addressed to the Head Office at Queenston. Prompt delivery of fall orders can be made.

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Lilies, Chinese, Sacred, large	.10	1.00	
Hyacinths, Roman, 4 colors	.05	.50	3.75
Hyacinths, Dutch, 4 colors	.07	.60	4.00
Narcissus, Paper White Grandiflora	.05	.40	2.75
Narcissus, Single, 6 varieties	.04	.30	1.75
Narcissus, double, 4 varieties	.04	.30	2.00
Scilla, Siberica	.03	.25	1.50
Snowdrops, Single	.02	.15	1.00
Tulips, single, named, 6 colors	.04	.30	1.75
Tulips, single, choice mixed	.03	.25	1.25
Tulips, double, named, 6 colors	.04	.35	2.00
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who knew him when he lived in Ottawa will remember his tall, manly figure, his rugged strength and the iron like grip of his hand, and they can scarcely believe that wth his great physique serious illness could lay hold upon him. But he has been cut down in the prime of life. He died at Siasconset, Massachusetts, on August 10th, 1912, at the age of 48 years.

Mr. Craig was born at Lakefield, Argenteuil Co., P.Q., in 1864. His father, the late Wm. Craig, was manager of the estate of the late Chas. Gibb, a noted horticulturist of Abbotsford, Quebec, a lover of fruits and flowers, from whom Mr. Craig received the inspiration which decided him to make horticulture his life's work. From the High School in Montreal he went to the Agricultural College at Ames, Iowa, in 1885, where he specialized in horticulture and economic botany, becoming in 1887 assistant to Prof. J. L. Budd. Professor of Horticulture, and, in 1888, while still holding the latter office, he became assistant to the Director having charge of the department of Horticulture of the Iowa Agricultural Experiment Station. In January, 1890, he entered the service of the Dominion Government, becoming Horticulturist of the Central Experimental Farm, Ottawa, which position he held until the autumn of 1897. The work in horticulture developed greatly under him. The use of Bordeaux mixture in preventing the development of certain diseases of fruit was practically unknown in Canada when he began experiments, and as early as 1890 we find him trying different formulae to determine the best to use. To his energy in rapidly spreading the good news of the possible control of apple scab, is largely due the wide and early use of Bordeaux mixture in Canada. When San Jose Scale was first discovered in Ontario in 1896 the prompt action which was taken to control it was largely due to him. In 1893 he assisted the Provincial Government in organizing the Ontario Fruit Experiment Stations.

He was one of the most enthusiastic and energetic workers in the Ottawa Horticultural Society, while in Ottawa, and was one of the few who organized the society in 1893. He was president of that society for 1895, 1896, and 1897, during which time it developed rapidly.

Mr. Craig resigned his position as Horticulturist of the Central Experimental Farm in 1897 and went to the United States, where he took a special course at the Agricultural College at Cornell University, obtaining the degree of Master of the Science of Agriculture there in 1899. He was appointed Professor of Horticulture and Forestry of the Iowa State Agricultural College in 1899, which he held until 1900, when he accepted the position of Professor of Extension Teaching at Cornell. He filled this office until 1903, when he became Professor of Horticulture of the Cornell Agricultural College, which post he held until his death.

Prof. Craig filled many offices in the United States. He became Secretary of the American Pomological Society in 1903 and was still Secretary when he died. Notwithstanding his many other duties he edited the National Nurseryman, a trade paper of importance and the organ of the American Association of Nurserymen. Prof. Craig's outstanding qualities were his strength of will and his capacity for work, which led him from one important position to another. He loved horticulture, and being intimately connected with it from his early youth he had a broad insight into, and a great knowledge of, the whole field.—W. T. Macoun.

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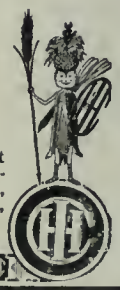

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TESTIMONIAL

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INTERNATIONAL STOCK FOOD CO. Limited
TORONTO ONTARIO

63

MENTION THIS PAPER.

SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

St. Thomas

The St. Thomas Horticultural Society, which has been coming to the front very rapidly during the past year or two, largely through the efforts of its president, Dr. Frank E. Bennett, and whose membership has doubled, now standing at three hundred and twenty-nine, intend going after a membership of seven hundred next year. One of the best features of this work has been its lawn and garden competitions. This year photographs were taken of all the prize gardens and lawns and arrangements are being made with one of the local papers to publish them in a special edition. The Balaclava Street school grounds, which took first prize in the school garden competition, are, according to Dr. Leake of Toronto, Inspector of Manual Training Schools, the finest grounds in their floral arrangement and effect that he has seen. The officers of this society are enthusiastic and naturally results are following.

Hamilton

Increasing interest is being taken by the citizens of Hamilton in the descriptions of Hamilton gardens being published in the daily papers by members of the Hamilton Horticultural Society. The society some time ago appointed one or two of its members, including Mrs. A. L. Potts, to visit the gardens of its members and others to secure descriptions of them for publication in the daily papers. At first it was feared that the papers would not be willing to publish the articles when prepared, and also that the public might not be interested in reading them. This fear has proved baseless. Mrs. Potts, in a letter to THE CANADIAN HORTICULTURIST, states that so much interest is being taken in these articles the papers are anxious to obtain them, and have promised to find all the space necessary to publish even more complete articles than those that have been furnished. They have been publishing the articles as soon as supplied, and asking for more. Some thirty have been printed.

"I am having funny experiences," writes Mrs. Potts, "but they add zest to this new occupation. It is flattering to learn of the interest being taken in these articles. It is far wider than is generally realized, but the funniest part is to be informed that 'So-and-So' has been reading these articles and wants us to go and write up their garden. This is a line of work that other societies might follow with advantage.

Strathroy

The Strathroy Horticultural Society recently held the most successful show for the children of the public schools in its history, there being nine hundred and forty-four entries. Over one hundred dollars were given in prizes to the scholars of the nine different rooms of the public schools for the following: Best six asters, white; best six asters, pink; best twelve asters, white; best twelve asters, pink; collection of nasturtiums and hand bouquets and there was a large and keen competition for the premiums. The flowers completely filled two

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We have cold storage facilities and can store your apples till a favorable price can be realized, thus protecting your interests. Write or wire us to-day.

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For Your Fruit and Vegetables

OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto market, we have established branch warehouses with competent men in charge at **Sudbury, North Bay Cobalt, Cochrane and Porcupine.** In time of congestion on the Toronto market we have a ready outlet through these branches. We never have to sacrifice your interests.

We Are Protected by the Produce Reporter Co's System — Credit Book — Chicago — All Contracts Governed by Their Trading Rules and Grades

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Branch Warehouses: Sudbury, North Bay, Cobalt, Cochrane and Porcupine

H. PETERS
88 Front St. East, Toronto

References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.

International Apple Shippers Association

Take A Scoopful Of Each— Side By Side

Take "St. Lawrence" Granulated in one scoop—and any other sugar in the other.

Look at "St. Lawrence" Sugar — its perfect crystals — its pure, white sparkle— its even grain. Test it point by point, and you will see that

Absolutely Best St. Lawrence Sugar **Absolutely Pure**

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Analysis shows, "St. Lawrence Granulated" to be "99 99/100 to 100% Pure Cane Sugar with no impurities whatever"

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Preparation of

Cod Liver Oil

This "builder-up" is rich in the medicinal and nutritive properties of the best Norwegian Cod Liver Oil—**without the disagreeable taste.** It also contains Extract of Malt. Extract of Wild Cherry and valuable Hypophosphites, which tone up the whole system and particularly strengthen the Lungs, Throat and Bronchial Tubes.

In 50c. and $1.00 bottles, at your druggist's. 305

NATIONAL DRUG AND CHEMICAL CO. OF CANADA, LIMITED.

How many acres can you stump this Fall?

This depends upon how soon you get a Swenson's Malleable Stump-puller. They are made in five sizes, so write for Catalogue "H" and find out what size you want. Every machine guaranteed, and a stock on hand for prompt shipment. Write today, telling us the size and kind of your stumps.

CANADIAN SWENSONS LIMITED - Lindsay, Ontario

large rooms of the school and made a most beautiful sight. Crowds attended from two to five o'clock in the afternoon. The School Board gave the public schools a holiday. The success of the show is due in large measure to the energetic work of the obliging secretary, R. F. Richardson.

Weston

On account of the slaughter of birds and squirrels in the vicinity of Weston, the society appointed a committee to look into and deal with the matter and to confer with the Toronto Humane Society.

Toronto

A feature of the monthly exhibition of the Toronto Horticultural Society held during August was an exhibit of rare waterlilies made by Mr. Dreer, of Philadelphia, one of the greatest producers of aquatic plants in the world. It consisted of twenty-seven varieties ranging from white and creams through pinks and reds into the deep purples, many of them being three inches in diameter.

Annapolis Valley

Manning K. Ells

In about another week "the Valley" will have finished gathering one of the best crops in its apple growing history. This is particularly true of King's Co., where nearly, if not quite, as many barrels will be picked as last year. In going about the country one fact is noticeable—the very large crops are on the very well cared for orchards. Trees of low vitality could not stand another crop like last year without a rest. Where cultivation and manure are not lacking annual crops can be expected if weather conditions are right. Well sprayed orchards without exception are yielding more apples than where spraying is neglected or only done in a half-hearted manner. Fungus diseases have more to do than we think with the "set" and "drop."

The pack of the United Fruit Companies is giving much satisfaction in the local markets. It is now possible for a dealer to buy a car of Gravensteins of one pack, true to grade and uniform right through the car. With this method of handling, the Gravensteins may again take a premier place among Nova Scotia apples, a place which it had lost by the miserable manner of marketing. Raised right and packed right, the Gravenstein is our greatest advertisement. If its season could be extended by a system of cold storage, its principal disadvantage would be overcome.

Eastern Annapolis Valley

Ennice Watts Buchanan

The United Fruit Companies of Nova Scotia, Ltd., are so well organized that much of the bookkeeping of the branch companies is going through the head office at Berwick, thus saving managers much work. As a result of this individual growers have very little knowledge of apple prices and less anxiety with regard to studying markets. It also lessens the hired help problem, as the men who were employed to sort the fruit on the farms now find work in the warehouses. It is also estimated that by cooperation two or three thousand dollars will be saved in the cashing of small cheques.

Evaporators are springing up every five or ten miles; these industries offer forty cents a barrel for apples over two inches and pay their boy and girl workers a dollar a day. An evaporator costing two thou-

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The Movement-- In connection with our sweeping fighting on trust methods we have selected our **finest** highest grade watch for a special offer direct to the people. **Material:** *The best that money can buy.* **Workmen:** *World renowned experts in their line.*

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was made to the giant factories four years ago, why have they not answered? Why have not these factories produced a watch **equal** to the Burlington? And this challenge did not ask our competitors to produce a watch **better** than the Burlington. NO. If they should produce a watch **equal** to the Burlington we should be the losers. Our $1,000 still lies in the bank for competitors to cover.

No Money Down

We ship the watch on approval, prepaid (your choice of ladies' or gentlemen's open face or hunting case). You risk absolutely nothing---you pay nothing---not one cent unless you want the great offer after seeing and thoroughly inspecting the watch.

A Bomb! for the Watch Trust

The Burlington Offer— Our startling and smashing direct offer is overwhelming the watch trust. The superb Burlington Special at the anti-trust rock-bottom price—the same price that even the wholesale jeweler must pay—is paralyzing competition. Such a *smashing and overwhelming* offer has never before been heard of in the entire history of the watch industry. Just think of it! You may secure one of these superb time-pieces—a watch of the very latest model, the popular new thin design, adjusted to the second—19 jewels—the most perfect product of the most expert watch manufacturers in the world, at the rock-bottom price, direct from us—the identical price that even the **wholesale** jeweler must pay. And you may pay this rock-bottom price at the rate of $2.50 a month. Yes—only $2.50 a month and all the time you are carrying this most superb time-piece. No wonder competition is paralyzed. No wonder everyone says that this is the greatest watch offer of the age.

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Get this wonderful new watch book. It is free and prepaid. No obligations whatever. It will tell you about our gigantic fight against the trust and trust methods. It will tell you of quiet agreements which the giant factories have with dealers which enable them to control trade and to uphold prices. That is the reason why we say that the great watch factories are a trust. It is because they have contracts and agreements with dealers everywhere which enable them to control trade and to uphold prices. It is not an illegal trust; but its methods are unfair to us—unfair to the public who must pay the price. We want you to get this watch book at once. Find out the inside facts of the watch industry. This book will also tell you about the superb Burlington Special and how it is manufactured for *quality*, not *quantity*. Just put your name and address on the coupon and send it to us today. We will send you the book prepaid—no obligations on you whatever. Do not delay. Better write *now*.

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Big Ben ends the over-sleeping of Farm Hands

Will you spend Three Dollars to insure yourself *for years* against that everlasting bother—*getting the farm hands in the fields on time?* Will you spend it to insure *a full days work* from each man six days out of every seven.

Then, spend it for Big Ben. He's doing it on thousands of farms every day right now. More than a million people have spent it for Big Ben to help them get to work on time. Don't you want to join the Big Ben Army. Don't you want your farm hands to be members?

Alarms are sold at $1.00 and $1.50 less than Big Ben costs but such alarms are merely things to *wake up* by, not to wake *on time* with. They enable you to make a *guess* at the right time, that's all.

Big Ben enables you to *know* the right time. *When he* wakes you he does it at the time you *want*, the *right time.*

Then, cheap alarms *may* last a year but Big Ben *actually* lasts for years *and* years. He's built of *steel.* He's a handsome *clock* plus a punctual alarm. You can use him all day long in any room for he fits bed room, parlor, dining room or hall.

The city man can get the right time of his neighbor or by picking up a telephone but that's not so convenient for *you.* You need a reliable timekeeper always in the house. That's why you need Big Ben more than you need a plain "alarm."

Big Ben rings just when you want and either way you want *five straight minutes* or *every half minute during ten minutes unless* you flag him off. His big keys make winding easy and his great open face and large hands tell the time plainly across the largest rooms.

Big Ben is sold by 5,000 Canadian dealers. His price is $3.00 anywhere.—If you cannot find him at your dealer's, a money order sent to his designers, *Westclox, La Salle, Illinois,* will bring him to you duty charges paid. Put him right now on your Xmas list.

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FREE ON REQUEST

Farm Lands Average Less Than $17 Per Acre. Undeveloped tracts sell from $6 up. Beef, pork, dairying, poultry, sheep and horses make big profits. Large returns from alfalfa, corn, truck, cotton, apples, fruits and nuts. Growers command good local and Northern Markets.

The Southern Railway Mobile & Ohio Railroad or Georgia So. & Florida Ry.

territory offers the finest conditions for farms and homes. Plenty of rain, mild winters, enjoyable summers. Promising *industrial openings* everywhere. The Southern Railway has nothing to sell; we want YOU in the Southeast. The "Southern Field," state booklets and all facts free.

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SMALL FRUIT PLANTS

Gooseberries, Josselyn, Red Jacket, Downing, Pearl, Houghton.—**Currants,** Perfection, Ruby, Cherry, White Grape, Lee's Prolific, Champion, Black Naples, Victoria.—**Raspberries,** Herbert, Cuthbert, Marlboro, Brinckle's Orange, Golden Queen, Strawberry-Raspberry.—**Garden Roots,** Asparagus, Rhubarb Write for Catalogue.

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sand dollars to build, can clear one thousand dollars a year profit.

Girls earn seventy-five cents a day in the warehouses at packing fruit. Apple grading machines worked by man power have been introduced, but probably gasoline engines will eventually be used.

The South African market has taken more boxed fruit than ever this year. Black Ben Davis seems popular with them.

Barrels are not so scarce as last year, and have sold for twenty-five or twenty-six cents. The Gravenstein apple crop was larger than was at first expected.

So far the weather has been cool, with few storms. The first heavy white frost finally destroyed corn and other tender plants on 9th October, which is later than usual. Potatoes are much cheaper this season, having dropped to thirty cents a bushel Tomatoes ranged between thirty and fifty cents a basket. Crab apples, ten cents a basket.

The British Apple Markets

Since my last report there has been a marked improvement in the market here. At the time of writing (Oct. 12) there is a very good demand for apples of good color and condition. With the home fruit crop disappearing there is a very reasonable hope of prices being maintained for good healthy fruit.

As is usual at this time of the year, buyers give special attention to color, and are always willing to pay "the price" for fruit of good appearance, which is the one thing lacking in most of the English fruit.

Amongst the Nova Scotian arrivals there has been a considerable quantity of "spotted fruit," for which very fair prices have been obtained, notwithstanding the doubtful condition of it. Its presence, however, has made buyers more keen on the better class stuff.

Shipments from Canada have been somewhat light, and with the exception of the "spotted" in the Nova Scotians, have arrived here in excellent condition. United States arrivals have varied a great deal as regards quality, in fact a good proportion could only be described as "medium." The prices have, however, been fairly good all round.

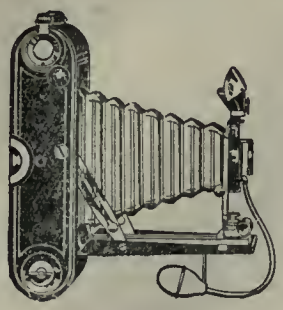
A number of "box" apples have been offered here, those from California meeti with a rather poor reception, while those from Wenatchee fared even worse.

Quebec Fruit Growers' Convention

As reported in the October issue of The Canadian Horticulturist, the annual summer meeting of the Pomological and Fruit Growing Society of the Province of Quebec, was held at St. Famille, Island of Orleans, Que., September 18 and 19. Prof. W. Lochhead, of Macdonald College, Que., described methods of combatting insect life in the fall, his remarks being along the same lines as the articles by him that appeared in the last issue of The Canadian Horticulturist.

Mr. Henri Cloutier, superintendent of demonstration orchards, at Rougemount and district, read a paper dealing with pruning methods. He corrected the old idea that pruning was going against nature. He showed that pruning made the tree vigorous, healthy and fertile. Pruning carried on in a careless or an amateur manner would, he explained, be injurious. The question of how to cut was of great importance.

The establishment of an orchard was explained by Mr. Ben Richardson, of Macdon-



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TORONTO

XMAS. December, our Big Special Number. New Cover, Special Articles, Well Illustrated. Out Dec. 1st. Just the right time for your Xmas Advertising

ald College, who discussed methods of planting, choice of varieties, and preparation of the soil. A common fault was that of planting too close together. Large size, as a merit, was an error. Cleanliness, stockiness and firm, hard growth were of more importance

In the absence of Mr. C. P. Newman, president of the society, Rev. Father Leopold, of La Trappe, presided over the meetings. In the hall of the Convent of the Sisters of the Congregation where the meetings were held, there was a small but fine selection of locally grown apples and plums on exhibition. Mr. J. C. Chapais of St. Denis, showed nineteen varieties of plums. There were also specimens of packed fruit.

IRRIGATION

The necessity of irrigation for fruit farms was urged by the Hon. J. E. Caron, minister of agriculture for the province. As an incentive, he stated that the provincial Government was ready to spend twenty thousand dollars on such work. That is, they would give the farmers fifty per cent. of any expenditure on irrigation, limiting each farmers to ten arpents. He also stated that his Government had bought two new drills from abroad, which would break the ground effectively and economically. . The Minister declared that farmers had too long suffered from the middleman. They did not wish to kill the middleman, but to reduce his abnormal gains, and enjoy a more equitable share themselves. By cooperation

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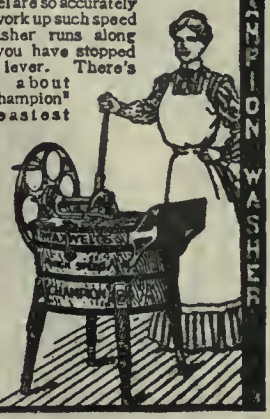
is the Washer for a Woman

In the first place, Maxwell's "Champion" is the only washer that can be worked with a crank handle at the side as well as with the top lever. Just suit your own convenience.

Another Maxwell feature—Lever and Balance Wheel are so accurately adjusted and work up such speed that the washer runs along even when you have stopped working the lever. There's no doubt about Maxwell's "Champion" being the easiest running washer on the market. Write for new illustrated booklet if your dealer does not handle Maxwell's "Champion" Washer.



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92

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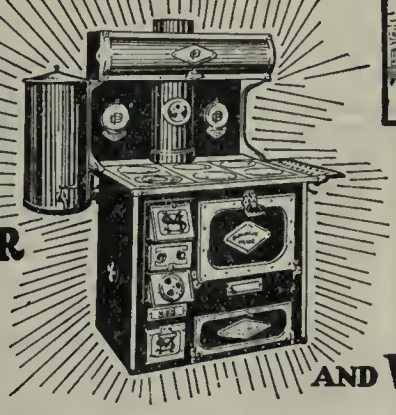

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AND WE PAY THE FREIGHT

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Direct From The Largest Malleable Range Works in Canada

IF you want to save from $25 to $30, and at the same time get the most satisfactory kitchen range made, write for our Catalogue and look into the merits of the "DOMINION PRIDE," at from $41 to $49.

If we sold you identically the same range in the usual way, through a dealer, you would have to pay from $69 to $78 for it. You would be paying two extra profits—to wholesaler and retailer—which would add $25 to $30 to the cost of your range, but absolutely nothing to its value.

"The Evolution of the Cook Stove"

TELLS about cooking from the time the Cave Dwellers dropped hot stones into the pot to boil it. It also tells all about "Dominion Pride" Ranges. Whether you need a Range just now or not you will enjoy reading this book.

Write for Free Copy.

Besides costing much less than other ranges in its class, the "DOMINION PRIDE" is much more satisfactory It is made of tough, **strong, malleable iron** and the **best blue polished steel**—materials which **will not warp, crack or break.**

The polished steel does not need blacking—simply rub it over with a cloth. With its cold rolled steel plate oven—sectional iron fire-box lining, with air chambers—and double-walled flues lined with asbestos—the "DOMINION PRIDE" is the most economical range you can buy. Actual tests have proved that it **saves over 30% of fuel,** burning either wood or coal.

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A "DOMINION PRIDE" Range, with high closet shelf and elevated tank or flush reservoir, with zinc sheet to go under range, 8 sections blue polished steel pipe and two elbows, will be delivered to any station in Ontario, Quebec or the Maritime Provinces for $41, or to any station in the four Western Provinces for $49—$5 to be sent with order and balance to be paid when the Range is delivered at your station. **If not convenient to pay cash we will arrange to accept your note.**

Canada Malleable & Steel Range Mfg. Co., Limited, Oshawa, Ont.

When writing it will be a distinct favor to us if you will mention this paper. 7

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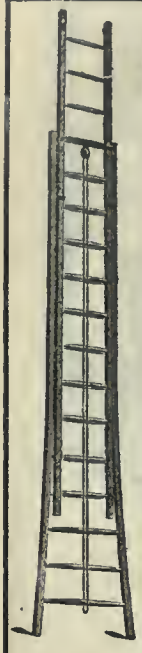

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Makers of Ladders for every conceivable purpose

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It depends very largely on the seed you sow. You want seed of strong germination and true to character, such as can only be assured in

CARTER'S TESTED SEEDS

Carter's is one of the oldest, and is certainly the most scientific of the seed houses in the British Empire. Everything from Carter's is good. Before you conclude your orders for spring, be sure you

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they could have cold storage and better railway and market facilities. Mr. J. L. Letourneau and Mr. J. C. Chapais also spoke.

COOPERATION

In a paper on "Some Features of Cooperation," Mr. Robert Brodie of Montreal, pointed out that notwithstanding the rather strong opposition of certain interests, there were five cooperative societies in different parts of the province of Quebec. "These societies," he asserted, "are yet in their infancy, and have much to learn. It may be," he added, "that competition is the life of industry, but very often it is the death of private industries." Mr. Brodie advised fruit growers to combine for the purpose of buying machines and implements that were only required occasionally.

Rev. Father Leopold, of La Trappe, read a paper upon "Insecticides and Fungicides." In this he dealt very thoroughly with the physiological troubles that affect plant life, indicating the causes of these diseases and contributory conditions. He advocated that disease in plants should be combatted by the community as a whole as well as by the individual. At a later stage Father Leopold gave an interesting demonstration in the art of properly packing apples.

In an informal talk on strawberry cultivation, Mr. F. X. Gosselin, director of the Demonstration Orchard at Ste. Famile, discussed methods of planting. In the general discussion that followed, those that took part included Messrs. R. Brodie, Peter Reid, Mr. Solyme Roy, Father Leopold, Mr. Hitchcock and J. C. Chapais.

Cold Storage the Solution

Much money is lost annually by fruit growers, who owing to lack of proper facilities for holding their fruit till a favorable market offers, are obliged to dispose of their season's crop practically as soon as it is harvested, no matter what the condition of the market may be. Such conditions place the growers practically at the mercy of the buyers, and with many it is a frequent occurrence to dispose of their season's crop at a low price at the time it is harvested, and then later on to see other growers who had facilities for holding their crop without deterioration, sell at a considerably advanced rate.

Recent reports this season indicate that quite a number of fruit growers who usually sell their crop to local buyers in bulk have not yet disposed of their season's crop. The anxiety of some of these growers to sell is apt to lead them to accept prices less than what their fruit is really worth. A grower in the Niagara District with a fine crop of apples was recently seriously considering the prospect of sacrificing his whole crop, for said he, "What else can I do? No one has come to buy it." And yet in a few months fruit such as he had, if in good condition, would find a ready market at good prices.

Anything which offers them relief from local or temporary conditions in the handling of their fruit crop, means larger returns to the fruit growers. Many cooperative associations have accomplished this result for their members by the erection of cold storage warehouses. But many growers are not in a position to take advantage of the facilities offered by these cooperative warehouses. To such the large terminal cold storage warehouses, such as that of the New Brunswick Cold Storage Co., Ltd., of St. John, N. B., erected for just this purpose, will appeal with special interest as a means of maintaining their crop in good condition until a favorable time for selling.

The advantages of terminal cold storage

The Canadian Horticulturist

Vol. XXXV DECEMBER, 1912 No. 12

The Christmas Tree

W. T. Macoun, Dominion Horticulturist, Ottawa, Ont.

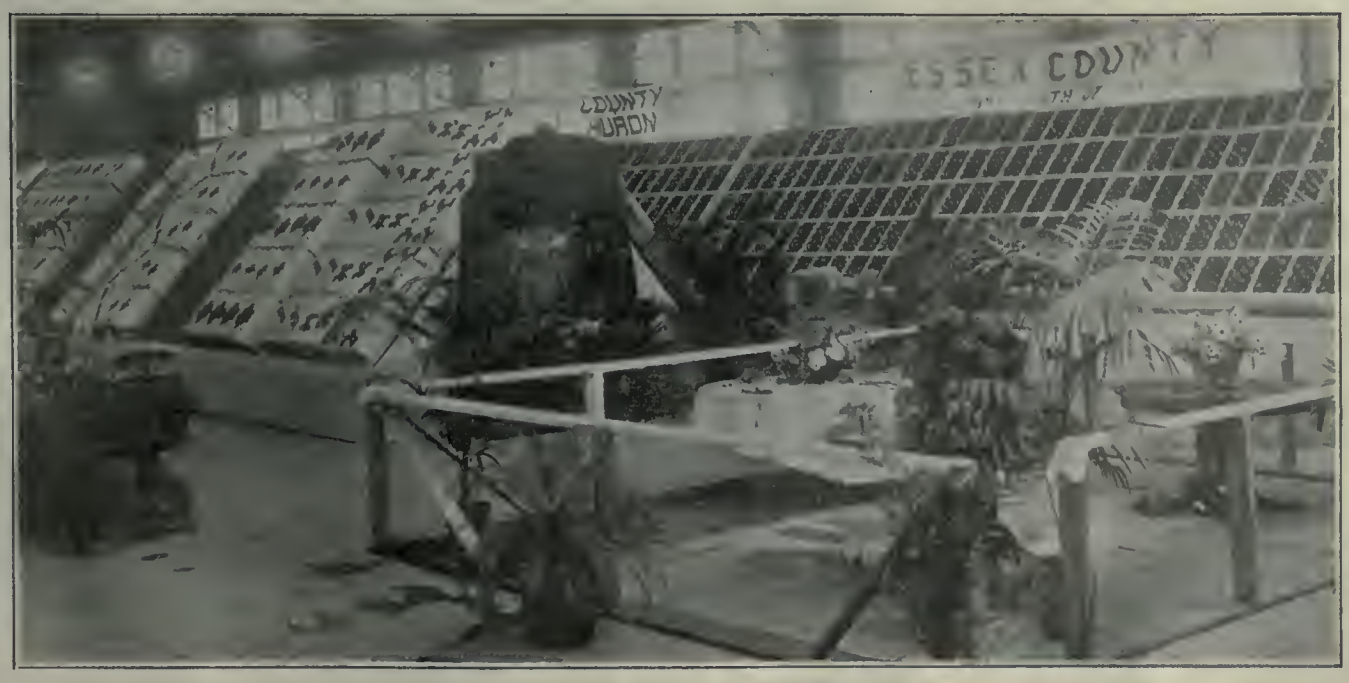
ALREADY children have begun to think of Christmas, and in those Canadian homes where the Christmas tree has become part of the annual celebration of this great children's day, happy memories of past excitement over trees laden with unknown and unexpected gifts crowd the youthful mind, while at the same time it tries to picture the tree as it will look this year and then counts the days until the great event will take place. While the Christmas tree is associated with that season of the year at which we commemorate the birth of Christ, it has grown out of a heathen custom. In early times, many centuries ago, certain trees were dedicated to a deity. Later, worshippers of this deity laid their gifts under these trees as offerings. The time when such gifts were made was, however, in the spring.

The Christians of Northern Europe finally adopted this heathen custom, but with some changes. They brought the trees into their own homes, or into public buildings, placing gifts under them for friends or for needy persons, and holding the celebration on Christmas Eve. The custom spread from Germany to England, with slight changes, one being that the celebration is usually on Christmas Day in England. In Canada, and in the United States, there are people of many nationalities, and the methods of decorating the trees and dispensing the gifts vary considerably.

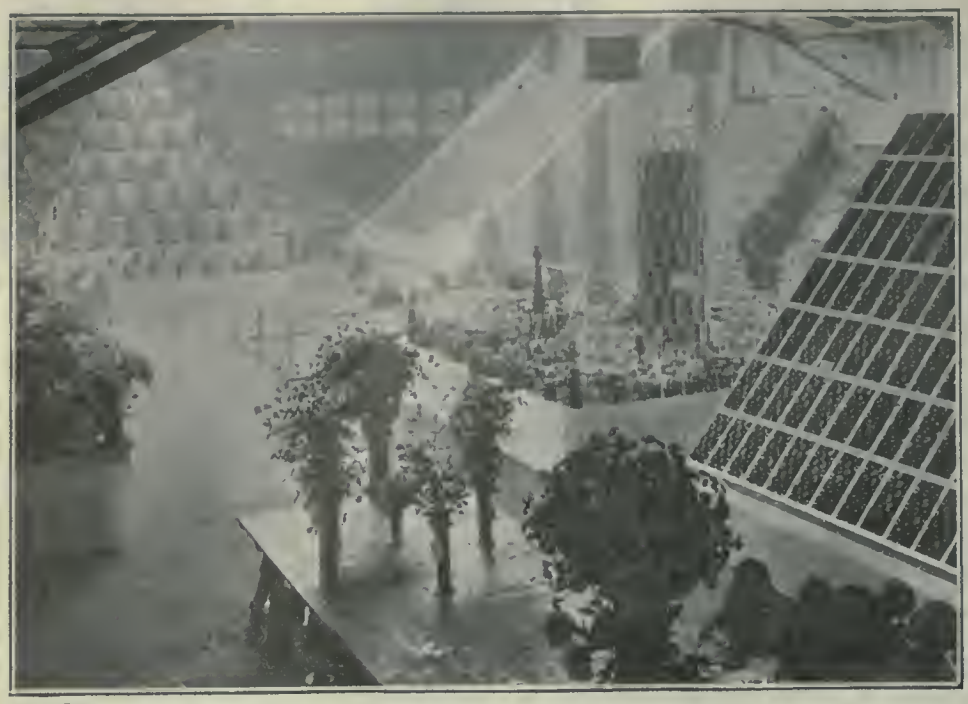
It is not known how many trees are required in Canada each year for Christmas trees, but the number is very large. In the United States it is estimated that about four million trees are required annually. Of this enormous number of trees, of which many come from Canada, many, unfortunately, are cut without due regard to the effect such wholesale destruction may have on the future supply of timber in those districts where the trees are cut. As most people are willing to pay for trees, and the custom is so firmly rooted in this country, trees will, no doubt, in time be grown in large numbers especially for Christmas when they can no longer be obtained in the forests. New regulations in regard to evergreens shipped from Eastern Canada into the United States require an inspection of the trees for injurious insects before they are permitted to enter, which may be the means of preventing the export of as large a number in future from Canada. It is surprising what efforts people will make to obtain Christmas trees. Nearly every year several fine evergreens are cut down at the Central Experimental Farm and removed under cover of night We can scarcely believe that these trees are taken by those who are going to use them. It is more likely that it is unscrupulous persons who take them to sell them.

The Balsam Fir is perhaps the most popular tree in Eastern Canada for a Christmas tree. Its branches bear the weight of presents very well and the leaves do not fall off when they become dry, which is the case with the spruces. The White Spruce makes a very good tree. It has many small, stout branches, which make it particularly useful. The Norway Spruce, while not as attractive in color, is a very rapid grower and more graceful, and no doubt will be grown in increasing numbers in the future, especially for Christmas trees. For Western Canada the Douglas Fir is perhaps the best tree. It is very graceful and the branches are sufficiently strong to make it bear its load well. Pines are used where Firs and Spruces cannot be obtained.

It takes from twelve to fifteen years for a tree to grow to the size desired for the average home if raised from seed,



Some of the Decorated Tables, and County and Wrapped Apple Exhibits of Fruit at the Recent Ontario Horticultural Exhibition



An Impression May Here be Gained of the Extent of the Fruit, Flower and Honey Exhibits at the Recent Horticultural Exhibition in Toronto

and trees for public places must be much older than this. But small nursery trees eighteen inches to two feet in height should make good Christmas trees in ten years. It will thus be seen that to grow trees especially for this purpose one must be prepared to wait some time, but there is much cheap, rough land which might be used in this way. Moreover, a very large number of quite small trees are used every year, both for decorative purposes and for Christmas trees for the younger children who amuse themselves for a long time by decorating them and by playing Santa Claus.

AVOID FIRES

A word of caution should be given to those who are about to have a Christmas tree for the first time. Beware of fire. While candles on trees make the latter look much more beautiful than they are without them, they are dangerous unless great care is exercised. I was at a Christmas tree once where the person who was dispensing the gifts in the guise of Santa Claus was dressed in a suit of cotton wool. In bowing to the people the wool caught fire. He rushed about and nearly set fire to some ladies' dresses, but fortunately a woollen shawl was thrown over him in time and the fire extinguished with but severe burns to himself.

Almost every Christmas one hears of fatalities, hence we prefer electric light if it can be obtained, and no light on the tree if it cannot be had. There are so many bright decorations made specially for Christmas trees nowadays that the tree can be made beautiful even without candles. Small, red apples attached to the tree are used by the Germans in their decorations, a custom which may well be followed by Canadians.

The Use of Fertilizers Defended

By Leslie Emslie C. D. A., Toronto, Ont.

While appreciating the desire of Dr. J. B. Dandeno, of Bowmanville, Ont., to contribute to our knowledge of the fertilizer question, as shown by his article on this subject that appeared in the November issue of The Canadian Horticulturist, we regret to note the tenacity with which he clings to old and almost entirely discredited theories. His statement that at least half the sum spent on commercial fertilizers in the United States and Canada is wasted, may be a slight exaggeration, but doubtless considerable waste results from ignorance of the meaning of fertilizer analyses and of the requirements of different crops and soils.

Dr. Dandeno undertakes to correct our misconception of what constitutes lack of fertility. This condition, he asserts, is not dependent on the lack of plant food he mentions in passing that he never met a man who could give a fair definition of "plant food." This being the case, we shall not make the attempt, believing that our efforts to do so to the satisfaction of Dr. Dandeno would be as futile as to undertake the definition of that popular dish of "human food" known as "boarding-house hash." We only know that plants draw on the soil and air for certain substances, entering into their composition, and if these substances are not plant foods or constituents of the same, let them be called by any other name.

Dr. Dandeno says: "Plant excretions are the chief cause of infertility, and it is in the decomposition of such material that the application of fertilizers of any kind proves of value." It is gratifying to note that, in Dr. Dandeno's opinion, fertilizers may sometimes, if even in an obscure way, prove beneficial; we had feared to hear that their application, like a dose of salts, might only tend to aggravate the condition referred to.

Dr. Dandeno might state with equal aptitude that the "food which we eat does not nourish the body, but serves as an antidote to the effects of the previous indulgence of our craving for meat and drink." We should endeavor to dispel his concern regarding the ruthless destruction of bacterial life in the fertilizer manufacturing process, with the assurance that the majority of fertilizing materials are of mineral origin and have, therefore, no association with bacteria.

Those of organic origin will be taken care of by the favorable bacteria (including the nitrifying bacteria, mentioned by Dr. Dandeno) which are present in all well-tilled soils. We agree with the idea conveyed in the statement that "certain fertilizers are adapted to certain crops and to certain soils, and the only way to find out which is to try these by using them on part of the field so as to compare."

In concluding his article Dr. Dandeno states that "no mistake is made in applying barnyard manure or other excreta, but in buying commercial fertilizers 'patent medicine chances' are taken." From this statement one can readily infer to what he likens his own prescriptions. We find no fault with Dr. Dandeno's quite natural aversion to patent medicines, but with his inclination to relegate commercial fertilizers to the same class.

Not wishing to encroach too far, we conclude with the reminder that commercial fertilizers are not supposed to be a substitute for, but rather a supplement to, barnyard manure, and that the chief value of the latter, as Dr. Dandeno rightly infers, lies in its physical action on the soil.

Peach Trees from Seed.—Seeing an article in The Canadian Horticulturist about peach trees, I would say that I have eight strong, thrifty peach trees that came up from stones planted in the chicken yard. Three of them are fully five feet high and I hope to see them bear. If they are half as good as the ones my mother grew on the old farm near Paris, I will be well satisfied.—E. W. Moyle, Lanstaff, Ont.

The apple barrel is nature's medicine chest.

Investigation Work on Little Peach and Yellows

Prof. L. Caesar, Provincial Entomologist, Guelph, Ont.

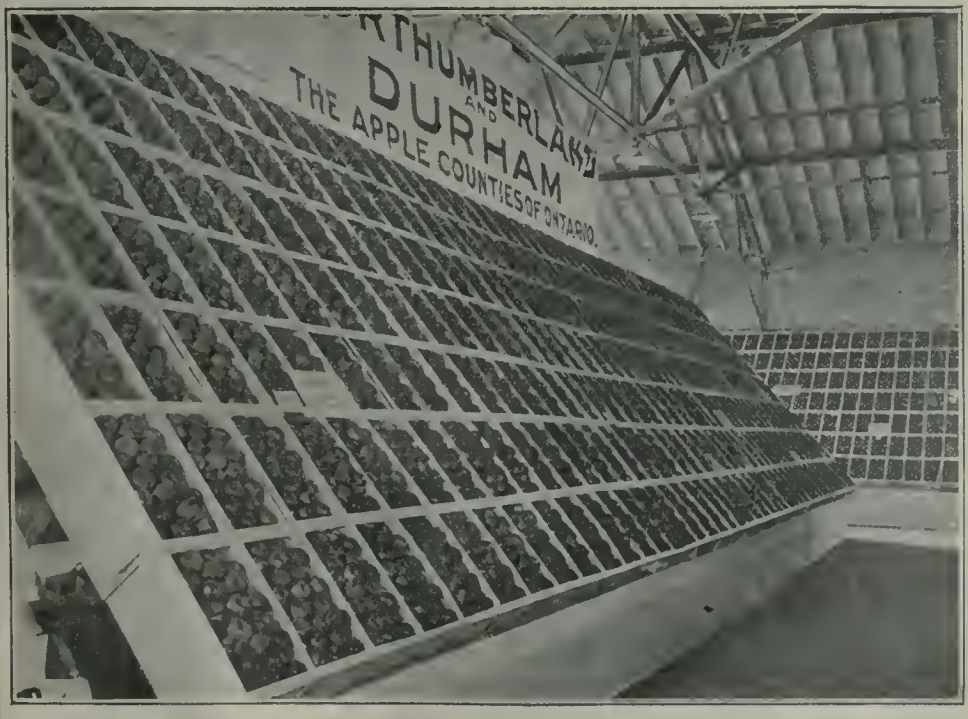
AS MOST of the peach growers probably know, I spent almost all this summer in the Niagara district in order that I might have a better opportunity to study Little Peach and Yellows and carry on investigation work on these diseases. As many growers no doubt would like to hear what line these investigations took and what results have been obtained, I have prepared the following account of my work.

In studying diseases one naturally tries to discover the cause, but I have not attempted to do so, because I know that if one were to endeavor to find this in the case of either Little Peach or Yellows, it would almost certainly mean years of the most careful laboratory and field work, with the probability of ultimate failure; for many good students of plant diseases have endeavored to find the cause of Peach Yellows and failed. Moreover, I learned in the autumn of 1911 that Dr. Duggar, formerly of Cornell University, but now of the Botanical Gardens, St. Louis, was working on these diseases and thought he had at last found a clue that might lead to the discovery of the cause. (For the sake of those who think that a powerful microscope would reveal the presence of some very minute causal organism I may state here that no microscope shows any organism to be present nor can any organism as yet be gotten to grow in any culture. So that, whatever the cause is, it is very different from that which produces Pear Blight or any of our other common diseases.) Feeling, therefore, that the study of the cause should be left to others better qualified for the work, I have devoted my whole attention to discovering if possible in what way or ways the diseases are spread and at what time or times of the year this takes place, and also how long a period may elapse from the inoculation of a tree until it shows clear symptoms of disease. If we get definite knowledge on these points we can then hope to simplify and improve our methods of control whether the cause is discovered or not, though we sincerely hope it will be.

In determining how the diseases are spread I have thought of the following: First, pits from diseased trees; second, buds from diseased trees; third, bees carrying pollen or nectar from diseased to healthy blossoms; fourth, rubbing or injuring healthy trees with diseased ones when removing the latter from the orchard or in any other way; and fifth, pruning tools used on diseased and then on healthy trees. Experiments have been planned, and carried out to test all of these possible methods of spreading Yellows and Little Peach.

In the autumn of 1911, with the assistance of Mr. Nelson, of Fonthill, and Mr. Harkness, of the Experimental Station, six hundred and thirty-one pits from diseased trees were gathered. Mr. Harkness planted three hundred and thirty-one of these at the Experimental Farm; eight germinated and grew. I planted one hundred at Guelph; seven germinated and grew, thus making a total of twenty-one diseased pits in all that grew, or about three and one-third per cent. Of the healthy pits used as checks, Mr. Harkness got twenty and one-half per cent., Mr. Nelson forty-five and one-half per cent., and I got sixty-eight per cent. to grow. The seedlings from the diseased pits, though not quite so vigorous on the average as those from healthy ones, show no sign yet of disease but will be kept for several years to see whether it develops.

*A paper read at the recent annual convention of the Ontario Fruit Growers' Association.



Northumberland and Durham's First Prize Half Car-load of Fruit at the Ontario Horticultural Exhibition

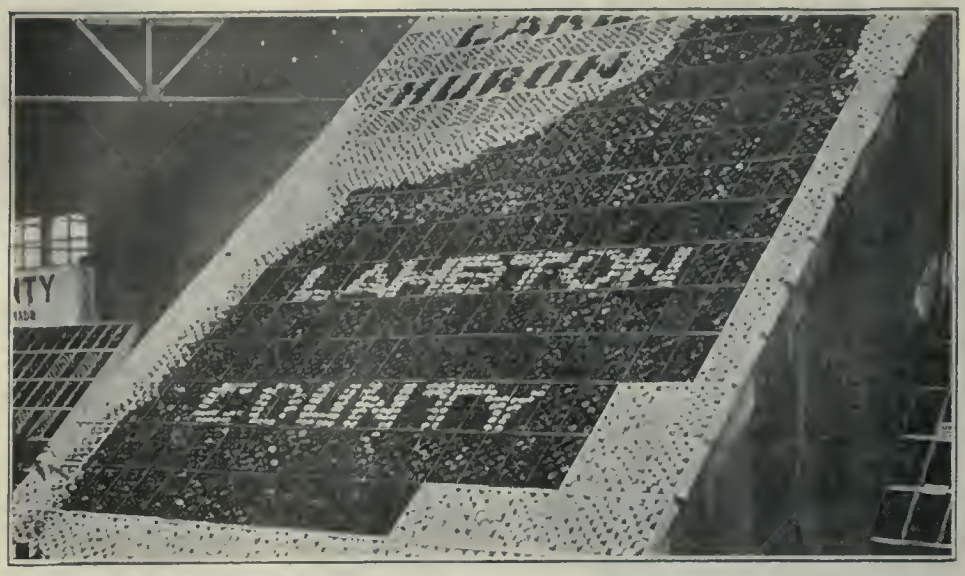
This half car load was the finest exhibit of fruit ever shown in Eastern Canada. It consisted entirely of Spies. There were three hundred boxes. Each box contained exactly one hundred apples, twenty to a layer.

OTHER TESTS

Believing that a further test of pits should be made, I have, with the aid of Mr. W. E. Biggar, the Provincial Inspector, and Mr. Spencer, of the Ontario Agricultural College, Guelph, gathered a few more than two thousand five hundred pits this fall from trees selected by myself in each case. A few of these trees showed symptoms of disease very distinctly, most of them only moderately so, and one tree from which four hundred pits were taken would have escaped the notice of nine out of ten inspectors. The pits were gathered in October and to make sure that there could be no mistake, the fruit in every case was collected directly from the trees. The four hundred pits mentioned above are being kept separate to see if any larger percentage of them will grow than of those gathered from trees showing the symptoms fairly clearly.

BUDS

Several experimenters have proved that Yellows and Little Peach can be spread by using buds from diseased trees, but I thought that we should test this ourselves and see not only how long it would be before the seedlings or trees thus budded would develop the symptoms, but also what variation there would be in the length of this time. Accordingly, healthy trees, four years old, in a young orchard on the Experimental Farm were budded. The buds in each case were taken from healthy looking shoots on diseased trees about half of them from Yellows and half of them from Little Peach. Each tree had at least four buds inserted into it, all of which took. Each budded branch has been tagged so that track can be kept of it. In addition, one hundred seedlings from healthy pits were budded in a similar manner, so that we might be able to compare the result on these with that on the older trees. Nearly all of the buds on these seedlings also took. The budding was for the most part done by Mr. J. W. Smith's best budder, whose



Lambton County's Great Display at the Recent Ontario Horticultural Exhibition
This exhibit comprized three hundred and fifty-two boxes of high grade, well colored fruit. It showed a map of the county boxes of wrapped fruit being used to outline the letters, border and lake.

services Mr. Smith very kindly offered to us.

To test whether insects could carry the disease at the blooming season, nearly two hundred blossoms were pollenized in the same careful manner that hybridists use when trying to produce new varieties of fruit. Pollen from four trees that I knew had been diseased the previous year was used on each tree. The two hundred blossoms were distributed over nine trees. Of the blossoms thus hybridized, eighty per cent, set fruit which remained on at least as long as the so-called June drop. A large proportion then dropped off, but some remained and reached maturity. None of these trees have this season shown any signs of disease.

In addition to the hybridizing, the blossoms on two other trees had nectar from diseased blossoms added to them. These trees also are still looking healthy.

RUBBING HEALTHY TREES

On August 13th four trees four years old were inoculated by rubbing several branches on each with diseased branches until the bark was ruptured. Again on September 9th, five more trees of equal age were inoculated in the same manner. On July 31st, leaves and fruit from diseased trees were gathered and crushed and a little water added to them. The juice thus formed was filtered carefully and three holes were made with a brace and small bit in each of four trees. The filtered juice was then poured into each of these and the hole covered over with grafting wax. This experiment was intended as a supplement to the rubbing, because, if in both cases the trees thus treated were to contract the disease, it would show that at least the sap contained the source of contagion, whereas the rubbing alone would not make this so clear. No sign of disease has yet been seen on any of these trees.

PRUNING IMPLEMENTS

On May 3rd three trees were inoculated with a saw. In doing so branches were cut from diseased trees and brought to the healthy ones. Then a fresh cut was made in each of these and immediately after on several branches on the healthy trees. The cuts were made chiefly on the under side to prevent drying out rapidly. At this date the buds were swelling, but none of the blossoms had burst. On July 4th, four more trees were inoculated with the saw in a similar way. The trees are still healthy.

Careful records have been kept of all the trees treated in the above various ways and the results will be watched with much interest next season. I was not surprised that no positive results were obtained this year as I did not expect any from what I had learned of the disease, from observations and reading. Interesting results from some of these experiments may be expected next year, if the disease works in the same way here as in some states across the line.

WHEN DISEASE SPREADS

The second main subject of investigation was to determine when the diseases were spread. Fortunately the above experiments, intended primarily to show how the disease is spread, are equally well adapted to show when this takes place. For instance, if the trees on which the blosoms were hybridized with pollen from diseased trees develop the disease in a year or two and the untreated trees all around remain healthy, we can feel pretty certain not only that bees can distribute the disease, but also that it spreads at least in blooming time. Again, if the trees pruned before the buds burst with an inoculated saw do not develop it we shall have some more data of value.

Our third subject of investigation was to determine how long a period elapses from the time a tree is inoculated until it shows the symptoms of the disease and what variation there is in the length of this period. This, I believe, is a very important matter, but fortunately once more nearly all the above experiments will help to give us data on it.

As these experiments begin to give definite results they will prepare the way for further investigations until finally we have succeeded in getting together a mass of reliable information that we hope will be of much service in the control of these dreaded diseases.

A Use of Fertilizers Advocated

Chas. J. Fox South London, Ont.

In his article on commercial fertilizers, that appeared in the November issue of The Canadian Horticulturist, Dr. J. B. Dandeno states "he never yet met a man who could give a fair definition of plant food." Now, taking a commonsense view of the matter, I will give my definition. It is this: Plant food is any substance that is placed and worked into the soil that will cause it to produce a better crop both as to quantity and quality. Surely such an ingredient may be called a plant food.

If you can get enough stable manure no better plant food can be used, but many of our farmers fail to make enough. The market gardeners around our towns find it impossible to get all the manure they want, so they must, if they want to produce early vegetables, use a certain amount of fertilizers.

The Doctor says "half the amount spent for fertilizers in Canada is wasted." If this is so, it seems to me strange that the sale of it is increasing in Canada, and in many other countries, where men know the value of money as well as the value of fertilizers. The Doctor also says "you can carry in your vest pocket all the plant food that a load of manure contains." Let the Doctor next spring apply a load of good rotted manure on a plot of ground, then on another plot work in the contents of his vest pocket, and see which plot produces the best crop of corn, potatoes, or any other root crop.

For about forty years I have used fertilizers, and now in the city of London with only a half acre lot, I use every year four loads of stable manure and four hundred pounds of fertilizers, and I claim, by the use of the latter, I am enabled to produce very early vegetables. I also use it among my flowers.

Walkerville: A Garden Town Beautiful*

W. H. Smith, Secretary, Horticultural Society

ARTICLE No. XII.

THESE are days in which a new civic consciousness is abroad in the land. We are beginning to resent unkempt boulevards, neglected lawns and gardens, ill-favored alleys, and ugly billboards. In their place we long for grassy swards, avenues of well-trimmed trees, homes nestling in the midst of gardens, and for all else that is lovely in horticulture. The members of the Walkerville Horticultural Society have been striving to make their municipal home a public garden. In what is here written, as well as by the accompanying illustrations, I hope to show some measure of the success that has attended our efforts.

One of Walkerville's Residential Streets—Notice the Boulevards. No. 1

Walkerville is situated on the bank of the Detroit River, a majestic stream over a mile in width. It is in the county of Essex. The population is between three and four thousand. All the streets and avenues are paved with reinforced concrete, macadam, asphalt, brick, or some other suitable material. The street sweeper is kept busy. It was not bought to lie and rust in the municipal barn. Therefore, the streets are clean at all times.

The boulevards are graded and the grass is kept green and well mown. I do not mean that a boulevard here and there is kept mown, but stretches a mile in length. Naturally they are very pleasing to the eye. The sidewalks are granolithic throughout the town. A glance at illustrations numbers one and two will give some idea of the appearance of our streets lined as they are by shade trees as well as of their beauty which is added to by mile after mile of privet hedge.

It might be well here to sound a warning about privet hedge. Fight shy of California Privet. The winter kills it, and it is decidedly unpleasant to plant a hedge, care for it, and have its appearance everything to be desired, only to be frozen to the ground with the first cold weather. When securing a hedge, therefore, be sure and purchase English Privet (privet vulgaris); the severe winters will not injure it

Illustration number three shows one of our alleys This illustration, as well as all the others, was obtained without special preparation having been made. Did you ever see a perfectly clean alley before? People generally figure that an alley is a place in which to dump garbage, tin cans and refuse of all descriptions, and where it may be allowed to remain until the alley is impassable and has become a breeding place for flies and possibly disease. Of late years, however, we hear a great deal during the summer about "Swat the Flies." We would not hear so much about flies if we kept more garbage pails having tight covers and kept our alleys clean. This is, perhaps, a rather peculiar topic to be writing about in a garden magazine, but we must all admit that it is the "tout ensemble" which makes a perfect picture; and it is impossible to have a pretty town or city with dirty streets and filthy alleys.

The following is an excerpt from our by-law respecting the removal of garbage and refuse:

"Every person shall dispose of all "garbage, for the disposal of which he "is responsible, either by burning the "same or in the following manner, "that is to say, the garbage shall first "be drained of all liquids, then wrapped securely in paper, and then be "deposited in a proper, securely covered receptacle, and then kept until "taken away by the town scavenger "as may be directed by the council, "&c.

"The said receptacle shall be kept "by every person on his own premises "as conveniently as may be to his

Well Kept Hedges, Boulevards and Streets do much to Beautify Walkerville's Streets. No 2

*This article takes the place of the usual article on Canadian gardens that has been a feature of this year's issues of The Canadian Horticulturist. "Flower Gardens of Walkerville," an article by the same writer, will appear in the near future. It will be well illustrated.

An Alley in Walkerville. "Did you ever see a Perfectly Clean Lane Before?" No. 3

"entrance from the lane. No paper or "other rubbish capable of being easily "burned shall at any time be placed "or thrown or allowed to accumulate "in any of the streets or alleys of the "town."

Violators of this by-law are liable to a fine of twenty-five dollars, or ten days' imprisonment.

A glance at the photo of the alley shows a portion of a garbage pail by the opening in the fence, and the alley's cleanliness is proof that the by-law is not a dead letter.

PRIVATE RESIDENCES

Illustration number four shows blocks of residences covered with Boston Ivy (Ampelopsis Veitchii). Can you imagine how cool it looks upon a hot day to walk under shade trees and see the residences covered with this beautiful green ivy? We have whole blocks of houses and buildings covered with it. I think the leaves of the Ampelopsis Veitchii show richer tints in the autumn than the maple leaves.

Illustration number five shows the interest our manufacturers take in the grounds around their offices, factories, and storehouses.

The grounds of Hiram Walker & Sons, Limited, have a spacious lawn, with a border of privet, flower beds and vases, the building itself being covered with Boston Ivy, and overlooking the Detroit River, with Belle Isle (Detroit's world-famed island park), showing in the distance America's largest pleasure boats and freight carriers passing within a stone's throw.

Just a word about our many factories. The goods manufactured here are sent to all corners of the world. We have large automobile factories, manufacturing chemists, wire fence factories, and the famous distillery of Hiram Walker & Sons, Limited. The town is named after the founder. The Canadian Bridge Co., one of the largest structural steel manufacturing plants in the Dominion, and numerous other concerns which make Walkerville a bee hive of industry. It thus can readily be seen that this clean and pleasant town is not only a residential town, but is also a great manufacturing centre.

While all our citizens and members of the Town Council pride themselves upon the neat and prosperous appearance of the town, the little kiddies have not been forgotten. A safe bathing spot has been provided in the Riverside Park, and, while our citizens can sit and enjoy the cool breezes off the river, the children can bathe and sport in the water. A caretaker has been provided to see that the children do not get beyond their depth.

A Blackberry Disease

Dr. J. B. Dandeno, Bowmanville, Ont.

By blackberry is here meant what some people call thimbleberry and others the long blackberry. The disease appeared, here and there, in this locality in 1910, in June and early July. It affected the canes only, and seemed most destructive when the plants were crowded or otherwise shaded.

The surface of affected canes become first brownish, then darker brown, and later whitish with minute black points scattered here and there in the surface. While the fungus was working on the canes the leaves stopped growing and turned lighter green and later yellowish.

All the diseased plants should be cut out and burned as soon as the disease is manifest. From my observations the disease will not likely be very destructive unless the plants are crowded.

Boston Ivy Growing on Walkerville Residences. No. 4

Continuity of Bloom in Small Gardens*

W. T. Macoun, Dominion Horticulturist, Ottawa, Ont.

TO one person a garden seems small if it occupies ten acres or more of ground, while to another a garden of one acre will appear very large. The man who has but a small area at the back of half a city lot thinks that his neighbor who has the back and part of the front of a whole lot has a large garden compared with his own. One's standards as to what is or is not a small garden may thus be set in various ways. The garden of a true lover of flowers is always overflowing, and if he cannot expand, his garden always seems small.

In offering suggestions to obtain "Continuity of Bloom in Small Gardens" I have presumed that the kind of garden in mind by those who suggested this title is such as may be found in a town or city and occupying anywhere from part of half a lot to part of several lots.

One of the main features of a small garden should be a well kept lawn. I prefer a well kept lawn without flowers to flower beds in a plot of uncared-for grass. Fortunately a large proportion of our citizens have well kept lawns, hence these are not as rare as well kept flower gardens. This, however, is by the way and has nothing to do with continuity of bloom, but a flower garden without a lawn might be compared to a picture without a frame, or a precious stone without a setting. In the case of the garden, however, the picture and frame have changed places.

THE FRONT EFFECT.

In front of the house most of the ground should be given up to grass for various reasons, but there should be at least one bright spot from early spring until late summer; not a bed in the middle of the grass plot, but if possible close to the house or bordering the walk to the house. Here there should be tulips followed by scarlet geraniums. There is nothing in my experience so satisfactory for this particular purpose as these plants. If there is some place within sight of the entrance where Scarlet Salvia can be planted this, also, is one of the most satisfactory plants for massing, but as it will fail if the summer is hot and dry it should not be in too conspicuous a place.

There should be climbing plants on the house or verandah, and if the right kinds are planted there will be continuity of bloom from early summer until autumn. Among the most satisfactory are English Honeysuckle (which, however, is too tender for the colder parts of Ontario), Scarlet Trumpet Honeysuckle; Clematis virginiana, the common Virgin's Bower of our woods; Clematis Jackmanni; and Clematis paniculata. Of climbing roses three of the most satisfactory are Crimson Rambler, Tausendschon, and Dorothy Perkins. Where it succeeds, the Wistaria is one of the most useful and beautiful climbing plants. It is not hardy in the colder parts of Ontario.

SHRUBS.

A few flowering shrubs should find a place in nearly all small gardens. They not only help to keep the continuity of bloom, but will be attractive even when not in flower. Where there is room for only a very few specimens great care should be taken to plant those with a graceful outline and attractive foliage which will be pleasing to the eye all through the growing season. Two shrubs which have these special features are Spiraea arguta and Spiraea Van Houttei. They both bloom in the month of May, the former several days before the latter. A mass of several specimens of either or both of these against the house is very attractive. Both of these have white flowers. Another very graceful shrub is Caragana frutescens, bearing yellow pea-shaped flowers during the latter part of May. Other comparatively small useful shrubs which will furnish bloom later in the season are the Japanese Rose, Rosa Rugosa, some of Lemoines smaller growing philadelphus, such as Bouquet Blanc and Nuee Blanche and Weigelia Eva Rathke, a red flowered variety which appears hardier than most others.

By the middle of summer there will be so much bloom in the flower border that the flowering shrubs are not so much needed, but masses of Hydrangea arborescens grandiflora and Hydrangea paniculata grandiflora should find a place as these are very effective when in flower. As neither of these shrubs is particularly attractive when out of bloom they should not be planted in too prominent a place.

Lilacs, of course, should be in every garden where there is a place for them, but the blooming season of each variety is short, hence, if the space is so limited that there cannot be enough sorts planted to give a succession of bloom, we should not devote much space to this popular shrub. If there is room for one small tree let it be a European Mountain Ash, attractive in flower, foliage, and fruit, and if there is room for one more a Bechtels Double Flowering Crab apple will give delight by its bloom and also by its perfume. Fruit trees, also, are desirable in a flower garden if there is room for them.

A Walkerville Business Establishment—Would there were more like it. No. 5.

THE BORDER.

The herbaceous border seems the most suitable means of furnishing continuous bloom in desirable quantity in a small garden. It economizes ground, saves cutting up what little grass there is and makes a nice background to the lawn no matter how tiny it may be. I find in my experience, which now covers a good many years, that it is very difficult to obtain mass effects in small gardens. If continuity of bloom is desired some other effect must be obtained, unless annuals, which have a long blooming season, are used. Masses of color may be obtained from annuals, but to me most annuals are brilliant but not attractive, hence I would relegate most of them to a less conspicuous part of the garden, if it is large enough to have such.

For small gardens, I prefer to have many small clumps of plants blooming at the same time scattered through the border and so placed that they will make a good contrast, or blend with the foliage of other plants not yet in bloom, and

*A paper read at the recent convention in Toronto of the Ontario Horticultural Association.

also among themselves give a variety and pleasing contrast or blending of color.

To obtain the best results in a border it should be wide, ten or twelve feet in width not being too much, but in some places a narrow border is a necessity through force of circumstances.

HOW TO START.

Were I beginning a herbaceous border in a small garden with the object of obtaining the greatest continuity of bloom at the least expense in the shortest time, I should go about it in the following way: As in ninety-nine cases out of a hundred the desire comes in the spring, let us assume that we are starting at that time. Prepare the border carefully, using good soil and manuring it well with rotted manure. Plant nearly the whole border with annuals the first year, either sowing the seed where the plants are to be in the border or setting out the plants. At the end of the border which is least conspicuous, or in some other place if there is one available, sow seed of the following perennials of the best strains that can be obtained:

Iceland Poppy, Long-spurred Columbine, Oriental Poppy, Hesperis matronalis alba (White Rocket), Campanula persicifolia, Foxglove, Coreopsis grandiflora, Pyrethrum, Delphinium Chinense, Delphinium hybridum, Platycodon, Echinacea purpurea, Hollyhock.

It would be much better if this seed were sown in the autumn as a far larger percentage would germinate. If sown in the spring it should be got in the ground as soon as possible. Sow seed about half an inch deep in rows four inches apart and see that the soil does not dry down below the seeds, at least until after they germinate. If the surface soil is kept loose and weeds pulled out there should be hundreds of plants by autumn. It is desirable, if there is ground available, to prick out as many of the young plants as possible during a wet time in July, setting them about four inches apart each way.

From one or two dollars' worth of seed or less, many hundred plants should be obtained. The plants which are pricked out should be in splendid shape for setting out in September or early October, and even if they have not been pricked out they may be planted into the border directly from the seed bed.

CARE OF BULBS.

As soon as the annuals have been injured by frost or before, if it comes time to plant them, bulbs should be planted, and these should consist mainly of tulips and narcissus. If a good assortment of these is chosen there will be a succession of bloom from the latter part of April until the latter part of May. In our experience from six to ten bulbs is sufficient to plant in a clump. Clumps should be planted irregularly from one end of the border to the other and from the front to the back. The more clumps there are the better the effect will be, but it may not be possible to plant all that are desirable the first year. They should be planted so that there will be contrast or blending of colors in adjoining clumps and late or early tulips and narcissi should occur here and there all through the border so that there will be an effective display all over at one time.

The object of planting small clumps irregularly is that the perennials may be planted between and when they develop during the season they will hide the spaces where the tulips and narcissi have been. These small clumps of bulbs need not take the place of solid beds of bulbs if the garden is large enough to have such.

SEEDLING PERENNIALS.

After the bulbs have been planted and an outline of the clumps marked on the surface of the soil, the seedling perennials should be taken up and planted all over the border, planting from one to three plants of each kind in a group and bearing in mind that Iceland Poppy may be planted quite close to other plants as it will seed freely in the border and the original plants are likely to disappear after the second season. Columbines on the other hand must not be crowded, if they are to do their best.

Oriental Poppies have heavy, rank foliage and should be kept well away from weaker growing plants. As, however, the tulips will be about ready to dry up when the leaves of the poppies overshadow them, the latter may be planted near the tulips.

Hesperis matronalis alba, or White Rocket, is a most desirable plant. It is one of the few tall, white-flowered perennials blooming in the early part of the season. It should be arranged so that it will come in sharp contrast with the scarlet Oriental Poppies which bloom at the same time.

Campanula persicifolia, the Peach-leaved Bellflower, is very attractive during the month of June. One gets it in white and light and deep bluish purple. It spreads rapidly and seeds itself freely, and once in the border is always there, in my experience.

The yellow of the Coreopsis grandiflora makes a very pleasing contrast to the blue and white of the Campanula. It will be remembered when planting Coreopsis that the same plant only blooms one year satisfactorily, hence they may be planted fairly close to other plants. They seed themselves freely, and new plants are thus easily obtained.

Delphiniums: It is difficult to say which is the more useful, the Dwarf or Chinese Larkspur, Delphinium chinense, or the Tall Larkspur, the seed of which may be obtained under the name Delphinium hybridum. The advantage of the Dwarf varieties is that they do not look out of place in any part of the border, being tall enough for near the back and not too tall for near the front. There is not, however, as great a range in color as among the tall ones.

The Platycodon, or Chinese Bellflower, comes in bluish purple and white. It is a very satisfactory plant, blooming in July and August. It does not take up much room in the border, but will hold its own once it is established. The Purple Cone Flower Echinacea purpurea should be used in large numbers. It is very effective in late summer and autumn when bloom is scarce. It is tall and upright in habit and for this reason can be squeezed in between other plants. With a good supply of plants of the above flowers a good ground work for the border will be made and there will be bloom from early in the spring until autumn.

All of these plants seed themselves. Seedlings not wanted may be treated as weeds. When the seedling perennials which have been planted bloom the poorest should be rooted out, as more space will be needed every year for the newer things which are sure to be obtained.

There are many other plants which must find a place if the border is to look its best, but most of these will have to be bought or obtained from friends.

House Plants and Humidity

Chas. E. Stewart, Woodstock, Ont.

House plants, with proper attention and atmosphere, should thrive in the winter time, but how few people succeed with them. There is nothing which so beautifies a house and lends such an air of cosiness and comfort as a window full of plants. Perhaps you have tried to grow them and have had your disappointments despite your best efforts and attention. Perhaps you put the blame on the furnace, presuming that the gas killed them, as it surely would, but it really was not gas, but lack of humidity which caused your failure.

The active root-hairs of a plant are really aquatic and must always be in contact with an adequate supply of water. The stems and leaves are aerial, but their behaviour and form are largely determined by the water in the air, that is, the humidity. The water supply is used by the root-hairs, while the water-loss is the result of evaporation from the surface of the leaves. The humidity of the air exerts a direct control upon the amount of water evaporated by the leaves, and it is evident that the evaporation will be great where the air is dry. If this evaporation or water-loss is greater than the supply, curling, drooping, and withering of the leaves ensues.

Even when you water the plants faithfully, the excessively dry atmosphere of

A Hydrangea that had over 700 Flowers

This remarkable hydrangea measured fifteen feet across. It was photographed early in October in the garden of Mrs. T. Ellery Lord, Hull, Que.

the house is apt to overwork them by drawing up the moisture through the stems and leaves, for dry heated air will take up what moisture it requires from every possible source. Not only your plants but your furniture and woodwork, and even your own body, are levied upon.

In the heating of a moderately-sized house, at least four gallons of water should be evaporated every twenty-four hours, and even with this the humidity will not be greater than fifty-five per cent. When you consider that the humidity outdoors on a bright summer day is about seventy per cent., you will appreciate what an unnaturally dry atmosphere we have in our homes in winter, where, if any water is evaporated at all, it will be but a few quarts at most, with a resultant humidity of perhaps eighteen to twenty-five per cent.

By all means, both for your own good as well as that of your plants, evaporate water freely by keeping a pot or kettle steaming on the heater, or pans on the registers, and do not neglect the furnace water pan. True, it is too small to be of much benefit, but every little counts.

The Modern Peony*

J. H. Bennett, Barrie, Ont.

IT IS only in comparatively recent years that the peony has become popular with horticulturists, and been brought into prominence before the general public. The reason is not far to seek. To many people the name peony simply recalls far-away memories of an old-fashioned garden with its clumps of crimson peonies or "pineys," whose scent was more pungent than pleasant. But in recent years much more attention has been given to their cultivation and development, although many of the best varieties have been grown for at least half a century. Still the number of varieties has not only increased enormously but through specializing have developed in size, color and fragrance, and obtained a popularity which bids fair to dethrone the rose from its sovereign position as "Queen of Flowers."

The qualities which give the peony its present popularity with all classes of growers, so much so that it has been fitly termed by one writer or grower, "the flower for the million and the millionaire," may be briefly noted, namely, its beauty, fragrance, the durability of both plants and foliage, its hardiness, its profusion and duration of blooms, and its adaptability and manifold uses.

*Extract from a paper read at the recent convention in Toronto of the Ontario Horticultural Association.

BEAUTY AND FRAGRANCE.

Every one who has grown peonies must have been struck with their wondrous beauty, a beauty, moreover, which is maintained through every stage of their growth, from the moment when the first glint of color is seen coming through the ground in early spring, almost before the snow has disappeared, the development of the foliage, the formation of the dark green envelope of the buds, until the blooms are expanded in all their varieties of color and beautiful tints, their glorious shape, and exquisite fragrance.

The peony differs materially from many perennials in that it will continue to grow, yielding indeed the very best results each year, without replanting for many years, while the foliage lasts from the day the leaf buds show above the soil in spring, until the plant is cut down in preparation for wintering, with an undimmed and unchanging beauty of color.

The peony stands alone in the quality of hardiness; it does not ask for protection in even the most severe climate, and has practically an immunity from disease.

PROFUSION.

Every grower rejoices in the profusion of the plant and utilizes it to its fullest extent, the plants being a constant outburst of color ranging from cream and purest white, through the various shades of pink, lilac, rose and red, to the deepest carmine, purple and maroon, in every possible combination of shade and form, with flowers varying in size from four to eight inches in diameter, most of them having a delightful fragrance, and furnishing immense quantities of bloom from early June well into July.

No plant is easier to grow; this, indeed, is one of its strong points. Often in neglected gardens one sees large clumps of peonies that have flourished and bloomed for years. Yet they amply repay all attention given them. Peonies will thrive in almost any soil, but succeed best in deep, rich, moist clay loam. They are gross feeders, and the soil's fertility should be maintained, but do not use fresh manure.

An ideal peony bed or border may be made by removing the soil to a depth of two to two and one half feet. If the subsoil is of a porous and loamy nature the depth need not be so great. Over the bottom spread six to eight inches of well rotted cow manure, over this a layer of soil, and mix thoroughly. In this manner fill to six or eight inches above the surface of the ground or lawn. When planting cover the crowns or eyes of roots about three inches, taking care that the earth is well firmed about the roots, and allowing a circle of two and one half to three feet for future development of the plant. A mulch of coarse strawy manure is a benefit, particularly the first winter.

WINTER CARE.

The first and second year give the plants good care, keeping the soil well stirred during the early part of the season, allowing no weeds to grow. The third year the plants will sufficiently cover the ground, so less attention will be necessary. In late fall the tops may be cut off several inches above the soil, and thrown back with several inches of coarse manure as a winter mulch.

To cultivate a garden is to walk with God.—Bovee.

The Ontario Vegetable Growers' Convention

THE annual convention of the Ontario Vegetable Growers' Association was held in the Canadian Foresters' Hall, Toronto, on November 13th. Mr. Thos. Delworth, Weston, in his address as president, urged the Association to continue their efforts to have a bill passed to have a standard of weights and measures all over the Dominion. He referred to the experiments with seed peas and potatoes in New Ontario and to the Field Crop Competitions with vegetables. As regards the high cost of living he thought that a large share of the blame rested on the consumer. By buying in large quantities, especially for winter's supply, as people used to do years ago, a great saving would be effected. There would be less work, less handling, and consequently less expense to the middleman who could thus afford to sell more cheaply. Certainly the producer was not getting the benfit of the high prices.

The secretary-treasurer, Mr. J. Lockie Wilson, in his report gave a resume of the year's work. He mentioned particularly the work in connection with Field Crop Competitions, the winners in which competed at the Canadian National, Central Canada, and Western Fairs. During 1912 at these three exhibitions no less a sum than $2,500 was offered for garden products alone, excluding flowers. For 1913 he advocated the division of the province into three sections to show at Toronto, Ottawa, and London respectively, and thus do away with the long transportation of perishable articles that prevailed in 1912. Grants were given to the Toronto, Ottawa, and London branches in order to make a good display at these shows.

Mr. Wilson reported that the experiments in New Ontario had not been conclusive owing to wet weather conditions, but were fairly satisfactory nevertheless. He advocated more extensive drainage as being vital to success, and showed how, if the Dominion Government would admit ditching machines free, the farmer would be benefited, and no Canadian industry injured, as these machines are not manufactured in this country. About four hundred bags of seed potatoes from New Ontario are being shipped to the members at a cost of one dollar seventy-five cents a bag. Reports from the branches showed increasing interest and growth in membership. The cooperative system of purchasing is saving the members in some cases about one hundred per cent. The demand for the Annual Report of the Association continues to exceed the supply.

A motion by W. J. Kerr, Ottawa, seconded by W. J. Robb, St. Thomas, was carried asking the Dominion Government to admit free of duty traction ditching machines which are not manufactured in Canada and which would be of inestimable benefit to the farmer in view of the present scarcity of labour and great cost of draining and the much cheaper results that may be obtained from the use of these machines.

A long discussion took place on the transportation question, and many instances of injustice and discrimination on the part of transportation companies were shown. A motion was carried asking the Government to afford some relief to the vegetable growers by securing an outlet for surplus produce, and to get after the freight companies to give a cheaper rate. To get the Government to do this the Association must act cooperatively.

COOPERATION IN BUYING

The benefits of cooperative purchasing were well shown by W. J. Kerr, Ottawa, and Geo. Philp, St. Thomas, who had had experience in purchasing in large quantities the seeds and other supplies required by the local vegetable growers. There would be a saving of many thousand dollars to the branches and a better supply of stock secured were cooperative purchasing more generally followed.

In the discussion that took place on this subject itwas advised that the Association not only buy cooperatively, but that it should try cooperative packing, and selling by securing a reliable man, say in the mining districts of New Ontario, another in the prairie market, and another in England, who will place the produce in the hands of the consumers directly, or as directly as possible. In this way it was thought the members would realize better prices for their produce.

Prof. A. H. McLennan, of Guelph, and Mr. T. G. Raynor, of Ottawa, explained how the crop competitions were conducted and the benefits derived from competition through its stimulating effect in raising the standard of quality in the market. Mr. McLennan thought it well to make each branch a separate district and the prize crop in each district should be displayed at the Canadian National to compete one against the other. The growers were cautioned to observe care in the selection of seed, in the preparation of the soil, in the use of chemical fertilizers and stable manures, and in the

A Portion of the Vegetable Display at the recent Ontario Horticultural Exhibition

The Exhibit of Onions was a Feature at the Ontario Horticultural Exhibition

storing of vegetables in the proper way, so that they can be brought on the market when the market is in the best condition and the growers can realize the best prices.

POOR RAILWAY SERVICE

Mr. E. E. Adams, of Leamington, showed how most of the markets were spoiled through lack of proper railway service. He gave an instance of this which he had experienced. He had sent out a car of produce every day for a certain time, but instead of arriving on the market one car a day, they came in bunches of four and five, thus causing a glut, and as a consequence he could not realize the price he otherwise would have, had the cars arrived in the order he had sent them out. Mr. Adams hoped that in the near future something would be done to have freight rates arranged on a more equable basis and to ensure not only more prompt delivery at terminals, but better car service as well.

Each branch was advised by one grower to take up the matter of freight rates and secure definite information which could then be laid before the railway commissioner. As transportation was a burning question with the vegetable growers, it was thought it should receive first consideration rather than cooperation, and the one point to be kept to the front was to gather definite evidence, and then to hit while the iron was hot.

A resolution was carried appointing a committee to act in conjunction with a similar committee from the Ontario Fruit Growers' Association to meet the railway commissioner in regard to adjusting the freight rates.

Mr. J. J. Davis, of Byron, gave a short but interesting address on greenhouse work, describing the methods he employs in his own greenhouse in the growing of different crops, but more especially lettuce. Mr. Davis believes the Skinner system is the best method of watering lettuce, as the spray is light.

Mr. Roy Ellis, Leamington, a large grower of vegetables under glass, dealt with the growing of cucumbers in the house. He recommended the planting of cucumbers on the ground and not on the benches, and of having bees to fertilize the blossoms.

At the evening session an address was given by Hon. J. S. Duff, Minister of Agriculture, Toronto. Following this, Prof. Hutt, of the Guelph Agricultural College, gave an appreciated address on "The Ornamental Side of Market Gardening," which was illustrated by a number of fine steriopticon views.

Bean Growing Under Glass

John Gall, Inglewood, Ont.

While beans are not grown commercially under glass, they are very acceptable for the private table, and far superior to any that can be procured on the market during the winter months; therefore, for private greenhouses, beans are to be highly recommended as a forced vegetable. When successfully grown, it is surprising the number which can be gathered.

There are two methods of growing this vegetable—on raised benches or in pots. If grown in pots, half fill seven-inch pots with fairly rich porous soil, then plant six or seven beans in a pot. As the beans grow keep adding soil by degrees until filled. It takes about eight to nine weeks to mature a crop in a temperature of fifty-five degrees at night, with seventy to seventy-five during the day. The bench system is preferable, as there is less labor and attention required, and results are equal, if not better.

Greenhouse vegetable forcing has come to be one of the important branches of the profession. The product appeals readily to the consumer, as the plants are not subjected to extreme temperatures such as our early garden vegetables are at times. The results are they are tender and can be appreciated by all.

Marketing Early Vegetables

E. E. Adams, Leamington, Ont.

Before one enters the early vegetable business, he should get some information as to the probable chances he may have of marketing his products. I find many go into this, without giving the real business end of it much thought, in fact, many do not even try to find a purchaser until they have their goods in the package. One should be ahead of that system or no system and get busy before there is anything to market, and have arrangements made so that they may have some idea what they are doing.

A reasonably good system is for a shipper to procure a line of dealers throughout a greater or lesser territory, as occasion may require, giving these dealers prices on the different products as they mature, and soliciting their business for large or small quantities. It pays to explain to dealers what there is to offer either by description or when making out price sheets have cuts of the different stock representing their type as nearly as possible. Some dealers do not know much about some kinds of products and an idea expressed by a cut or engraving aids them.

Weekly quotations should be sent out by mail about the last of each week, covering the week following. I have found this method very satisfactory during a number of years and only consign to commission men my surplus stock each day. In this way I keep my packing house cleared out of each day's gathering.

Some growers form an association and have a manager to attend to the distribution. This is a good method provided the manager understands the business. The same methods are employed in selling the goods with the expense of selling deducted pro rata acording to the quantity of goods handled during the season.

The Canadian Horticulturist

Published by The Horticultural Publishing Company, Limited

PETERBORO, ONTARIO

The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO, QUEBEC, NEW BRUNSWICK AND PRINCE EDWARD ISLAND FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

1. The Canadian Horticulturist is published on the 25th day of the mouth preceding date of issue.

2. Subscription price in Canada and Great Britain, 60 cents a year; two years, $1.00. For United States and local subscriptions in Peterboro (not called for at the Post Office), 25 cents extra a year, including postage.

3. Remittances should be made by Post Office or Express Money Order, or Registered Letter. Postage Stamps accepted for amounts less than $1.00.

4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.

5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.

6. Advertising rates One Dollar an Inch. Copy received up to the 18th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.

7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,623
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in 1907, 6,527
" " " " 1908, 8,695
" " " " 1909, 8,970
" " " " 1910, 9,067
" " " " 1911 9,541

November, 1912..... 11,305

Sworn detailed statements will be mailed upon application.

OUR GUARANTEE

We guarantee that every advertiser is this issue is reliable. We are able to do this because the advertising columns of The Canadian Horticulturist are as carefully edited as the reading columns, and because to protect our readers we turn away all unscrupulous advertisers. Should any advertiser herein deal dishonestly with any subscriber, we will make good the amount of your loss, provided such transaction occurs within one month from date of this issue, that it is reported to us within a week of its occurrence, and that we find the facts to be as stated. It is a condition of this contract that in writing to advertisers you state: "I saw your advertisement in The Canadian Horticulturist."

Rogues shall not ply their trade at the expense of our subscribers, who are our friends, through the medium of these columns; but we shall not attempt to adjust trifling disputes between subscribers and honourable business men who advertise, nor pay the debts of honest bankrupts.

Communications should be addressed

THE CANADIAN HORTICULTURIST,
PETERBORO, ONT.

EDITORIAL

THE HORTICULTURAL EXHIBITION

The best feature of the recent Ontario Horticultural Exhibition held in Toronto was its promise for the future. When one remembers that eight years ago thirteen boxes and a few barrels of apples, none of them properly packed, comprised the exhibit at the first exhibition, whereas this year some five thousand boxes of apples, all well packed, to say nothing of large exhibits of apples in barrels and on plates, were shown, one may well hesitate to predict what the next ten years has in store for this now great exhibition.

A few years ago it was difficult to induce people to visit the exhibition at all. This year, although the exhibition was held at what was considered an inconvenient point on the grounds of the Canadian National Exhibition, thousands went out to see it. So great was the attendance the directors are now considering the advisability of using two or three buildings on the exhibition grounds next year and of providing accommodation in these buildings for the six or seven conventions which are now held in conjunction with it

In planning for future exhibitions the directors should do so on a broad basis. An effort should be made to anticipate what this exhibition is likely to become in the course of the next five or ten years, and arrangements be made accordingly. Now that there is reason to believe that it is possible to make a success of the exhibition on the Exhibition Grounds every effort must be made to so equip the various buildings that all the requirements of the exhibition for years to come will be amply provided for. The holding of a national apple show at an early date should be included in the plans for the future.

BUYING IN SMALL QUANTITIES

President Delworth, of the Ontario Vegetable Growers' Association, performed a public service when he drew attention to the losses sustained by the public through the increasing tendency to purchase vegetables in "drib" lots which could be purchased more economically in quantity. The same principle applies with equal force to the purchase of all kinds of fruit as well as to other household food supplies. It is not uncommon for apples to be purchased in some sections of our larger cities in such small quantities as the "quarter peck." It not infrequently happens that the best grades of apples which retail at fifteen cents a quarter peck may be purchased in bushel quantities for a dollar fifty and sometimes for even less.

By buying in larger quantities the public often could save twenty-five per cent. Were the various organizations that are interested in reducing the high cost of living to point out how great is the saving that can thus be made a large portion of the public might be induced to buy in larger quantities. It should not be overlooked, however, that those who buy in small quantities are generally poor people who lack the money required for the making of larger purchases and who, in many instances, have no proper place in which to store any considerable quantities of such produce. This seems to be one of those hard laws which prevent those who would most benefit from seizing the opportunities that their lack of means place just beyond their reach.

THE QUESTION OF BILLBOARDS

The discussion that took place at the recent convention of the Ontario Horticultural Association concerning the bill board nuisance affords evidence of the increasing interest that is being taken in civic improvement. The men who are behind bill board advertisements are primarily responsible for the agitation that is setting in against their use. So many beautiful landscapes are marred by hideously painted bill boards and so many city streets are spoiled in appearance in the same way it is little to be wondered at that the public is beginning to take notice and to clamor for an improvement.

In some of our larger cities forms of this class of advertising are appearing to which little exception can be taken. There are paintings so realistic and interesting that the ordinary citizen is apt to approve of them rather than condemn. They are in their way works of art

For the ordinary bill board little can be said. It may in time become necessary to follow the action of the French Parliament which last June passed a law taxing bill boards from ten to eighty dollars a square yard. Such a tax would have a tendency to reduce the number of bill boards as well as the size of those erected and to ensure the appearance on them of a higher class of advertisements. It is safe to predict that this form of advertising is here to stay. It is in sad need of regulation, however, and it is well, therefore, that it is receiving attention at the hands of such organizations as the Ontario Horticultural Association.

Marks of statesmanship were evident in that portion of the report of W. F. W. Fisher's committee of the Ontario Fruit Growers' Association in which fruit growers were urged to pack to a standard above that called for under the Fruit Marks Act. Too large a proportion of fruit growers are well content if their packs are sufficiently good to barely pass the requirements of the law. In their natural anxiety to use the largest possible percentage of their fruit they are inclined to lose sight of the importance of having their packs reach such a standard of excellence that the whole industry will be benefited in consequence. The members of the Ontario Fruit Growers' Association adopted the report containing this recommendation. We may well hope that fruit growers generally will strive to live up to the new standard that has thus been set.

It was a pleasing picture that painted by Mr. P. W. Ellis, of Toronto, the chairman of the Queen Victoria Niagara Park Commission, before the members of the Ontario Horticultural Association at their recent convention in Toronto. Mr. Ellis looks forward to the time when every tree, shrub, and flower grown in that great park will be correctly named and labelled and when the park will have become so noted for its horticultural features that excursions will be run from various sections of the country to see its various floral features alone, to say nothing of the great Falls whose beauty it adorns. It is men who have visions of this character who accomplish the wonders that the public later marvels over. Canada is to be congratulated in having a man like Mr. Ellis on this commission.

PUBLISHER'S DESK

It's a Happy New Year we wish you, and many of them.

This issue completes another year, the thirty-fifth, in the history of The Canadian Horticulturist. It has been the best year we have ever had. We have published more reading matter, enjoyed a larger subscription list, carried more advertisements, and in many respects accomplished more than ever before. We are now on the threshold of still better things. Next year the reading matter of The Canadian Horticulturist will be still further increased, our special magazine issues will be improved in various ways, more and better illustrations will be used, and a still higher class of articles obtained. We believe that the publication which does not improve goes behind. There is no standing still in the publishing or any other business. For this reason, if for no other, therefore, we intend that 1913 shall set new standards of excellence for The Canadian Horticulturist.

Just a word to our advertisers. Those who find it possible to do so will confer a favor and at the same time ensure their advertisements receiving the best possible attention when making up our pages if their advertising copy and instructions reach Peterboro not later than the 20th of each month. In making up our advertising pages we of course try to arrange the advertisements so that each will command the best attention from the persons most likely to be interested. But when advertisements reach us after most of our pages are made up we frequently are obliged to place them on other than the best locations or perhaps leave them out altogether. For instance, we had to refuse over two and a half pages of advertising ordered for our October number as the orders reached us too late to allow us to arrange additional space for them.

An Absolute Guarantee

When The Canadian Horticulturist, some years ago, adopted its protective policy, with a view to protecting its readers against the dealings of unreliable avdertisers, by publishing only such advertisements as its publishers believed were thoroughly reliable, it was one of the first Canadian papers to take a stand of this nature. There are even yet comparatively few publications in Canada which have gone as far in this direction as The Canadian Horticulturist.

Now we are going one step farther. Hereafter it will be our policy not simply to publish only such advertisements as we believe are reliable, but TO POSITIVELY GUARANTEE to our readers EVERY ADVERTISEMENT which appears in The Canadian Horticulturist from now on, and to MAKE GOOD ANY LOSS to readers who, through dealing with any advertiser whom we thought to be reliable when accepting his advertisement has, however, defrauded any of our readers.

The following is a copy of our guarantee, which, from now on, will appear in every issue of The Canadian Horticulturist, and which will take the place of our old protective policy:

"WE GUARANTEE that every "advertiser in this issue is reliable. "We are able to do this because the "advertising columns of The Cana-"dian Horticulturist are as careful-"ly edited as the reading columns, "and because to protect our read-"ers we turn away all unscrupu-"lous advertisers. Should any ad-"vertiser herein deal dishonestly "with any subscriber, we will make "good the amount of your loss, pro-"vided such transaction occurs "within one month from date of "this issue, that it is reported to us "within a week of its occurrence, "and that we find the facts to be "as stated. It is a condition of "this contract that in writing to "advertisers you state: 'I saw your "advertisement in The Canadian "Horticulturist.'

"Rogues shall not ply their trade "at the expense of our subscribers, "who are our friends, through the "medium of these columns; but "we shall not attempt to adjust "trifling disputes between subscrib-"ers and honourable business men "who advertise, nor pay the debts "of honest bankrupts."

Our readers and advertisers will appreciate the advanced stand which we have taken for clean, reliable advertising, and we look to see even a greater bond of confidence and good will existing between our advertisers and readers than in the past.

Ontario Horticultural Association Convention

The increasing interest being taken in the work of the Ontario Horticultural Association has been well shown of late years by the increasing number of local horticultural societies that have affiliated with the provincial organization. Reports presented at the annual convention of the Association held in Toronto, November 14th and 15th, showed that a larger number of local societies joined the association this year than ever before. The number of societies represented by delegates at the convention was large.

OFFICERS ELECTED

The officers elected for the ensuing year were as follow: Pres., Rev. A. H. Scott, Perth: first vice-pres., J. P. Jaffray, Galt; second vice-pres., W. J. Diamond, Belleville: treasurer, H. B. Cowan, Peterboro; secretary and editor, J Lockie Wilson, Toronto; directors: F. R. Bowden, Vankleek Hill.; J. H. Moorcraft, Bowmanville: Mr. Dockray, Toronto: J. H. Bennett, Barrie; J. O. McCulloch, Hamilton; Thomas Cottle, Clinton: Geo. W. Tebbs, Hespeler; Dr. Bennett, St. Thomas; H. J. McKay, Windsor.

Delegate to Canadian National Exhibition, Major H. J. Snelgrove, Toronto.

Delegates to Convention of American Civic Association, Pres. Scott, Secy. Wilson, and W. B. Burgoyne, of St. Catharines.

PRESIDENT'S ADDRESS

The president, Rev. A. H. Scott, of Perth, in his address traced the growth of gardening from early times to the present. The opportunities for working out ideals in horticulture and gardening in this country were great, and he asked the members of the association to bend every effort to the evolution of what is best in nature.

The report of the treasurer, H. B. Cowan, of Peterboro, showed a balance on hand of $94.73.

SUPERINTENDENT'S REPORT

Supt. J. Lockie Wilson in his report referred to a change in the act whereby now in cities having a population of over one hundred thousand a second society can be organized, but the grant to each society cannot exceed five hundred dollars.

The Legislative grant to societies is now twelve thousand dollars. The excellent work done in Minneapolis by public spirited citizens in conducting vacant lot gardening was mentioned with approval. Over one thousand lots were utilized in 1912, besides a number of home gardens. In 1910 there was only one vacant lot garden. Nearly every one who took part in the gardening in 1911 took it up again this year. The frontage of gardens is over eleven miles. Those gardens have kept the prices of vegetables in Minneapolis far below what they were in previous years, and lower than in other cities.

CULTURE OF PEONIES

An excellent paper on peonies was read by J. H. Bennett, of Barrie, who pointed out that the modern peony is very different from the old style plant, and has a beauty and fragrance of its own. This paper will be published in detail in The Canadian Horticulturist.

INTERESTING ADDRESSES

Prof. A. H. McLennan, O.A.C., Guelph, spoke on the best varieties of vegetables for amateur gardens. A list of the varieties recommended will be published in The Canadian Horticulturist.

In an address on "Horticultural Societies and Their Relation to Parks and Private Grounds." W. Bilger, of London, Ont., showed the beneficial effects that result from the work and influence of societies. Extracts from this paper will also be published in later issues of The Canadian Horticulturist.

Hon. James S. Duff, Minister of Agriculture, referred to the pleasure he took in the increasing tendency to improve private homes now so manifest in Canada, including the country districts. Beautiful flowers and vines may be seen in the gardens and on the houses of thousands of homes where a few years ago very little attention was paid to such beautification.

The growing of gladioli was described by A. Gilchrist, of West Toronto, whose remarks will be published later in The Canadian Horticulturist.

VACANT LOT GARDENS

The great work that has been accomplished in Minneapolis in the cultivation of vacant lots was described by Mr. Leroy I. Boughner, Editor of the Minneapolis "Tribune." Mr. Boughner explained in detail the workings of the garden system in Minneapolis, and of the community farms at Philadelphia and Detroit. He gave both of the schemes credit not only for the benefits resulting socially, financially, and economically, but for their effect as beautifying agents in the cities named. The cost of membership in the Minneapolis clubs is only one dollar, and this secures the privileges of a lot. He claimed that rich and poor entered on the work on exactly the same footing, and the same good results accrued to each. He deplored the fact that even such worthy schemes as the ones cited often fail owing to certain causes which might be removed. The reasons for the failure of such schemes he named as follow: The handing out of lots as "charity," which defeats its own end; the fact that many consider such schemes

(Continued on page ix.)

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The Ontario Horticultural Exhibition

The Horticultural Exhibition this year attained dimensions and an excellence far surpassing anythig of the kind ever hitherto seen in Eastern Canada. The great strides that have been made by this exhibition during the past eight years give good reason to believe that within another ten years it will rank as one of the great horticultural exhibitions of the world. The success that attended this year's effort has brought the holding of a national apple show measurably nearer.

The exhibition was held in the horticultural building on the grounds of the Canadian National Exhibition from November 12 to 16. In spite of the unfavorable location large crowds attended. Even this large building was not equal to accommodating all the entries received. Many, therefore, had to be refused. Next year, it is likly that the exhibition will be held in another but still larger building on the exhibition grounds, and that arrangements will be made to hold the various conventions that take place in conjunction with the exhibition in other buildings adjoining.

The floral exhibits, in point of quality, exceeded all previous efforts. The chrysanthemums were particularly fine. The display of honey was remarkably extensive and well arranged, while the exhibits of fruit, in spite of the unfavorable season, gladdened and pleased all the fruit growers who saw them. They afforded a wonderful demonstration of Ontario's possibilities as a fruit district.

Never before has there been in Eastern Canada such a splendid display of apples, although seldom has there been a season so unfavorable to the production of clean fruit Fruit growers were justified in their fears that the exhibits this year might not be of as good quality as were staged in previous and more favorable seasons The damp, dull weather had been peculiarly favorable to the development of apple scab and decidedly unfavorable for the proper coloring of the fruit It was, therefore, an agreeable surprise to find that in all of the about five thousand boxes, two hundred barrels, and one thousand four hundred plates comprised in the exhibit, there was hardly any scab to be seen. The coloring of the fruit compared favorably with the coloring of the exhibits last year when the season was particularly favorable to the production of good colored fruit. Surely this is great testimony for the efficacy of good spraying, thorough pruning, and up-to-date cultural methods.

SUCCESS DUE TO COOPERATIVE SOCIETIES

The extent of the show and the personnel of the prize winners afford most convincing testimony of the great influence that cooperative fruit growers' societies now wield. Well over three-quarters of all of the apples on exhibition were placed there by cooperative societies or by members of cooperative societies. Norfolk county, which a few years ago was practically unknown in the fruit growing world, secured over fifty first prizes, thirty-one seconds, and ten thirds. Among their notable winnings were first and second on lots of one hundred boxes each, first on fifty boxes, two firsts and a second in classes for twenty boxes, and the sweepstakes box, one of the most coveted prizes of the fair. The winning box was of Spies, grown by R. H. Johnson. A little over one-third of all of the apples at the fair came from

Removal Sale

The Sale of a portion of our Nursery Land at Pointe Claire necessitates the removal of our main nurseries.

This land must be cleared next spring and we have decided to offer the stock at a discount of from 25% to 50%.

All stock is first-class and consists of

Thirty Thousand Fruit Trees of the hardiest varieties.

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Fifty Thousand ornamental shrub and hardy Perennials, Paeonies, etc.

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7 Acres	Sandy loam and black loam, at Brooklyn Station, **$1,000.** Only $100 down.
10 Acres	Black loam, one mile from Oshawa Station, **$1,000.** $200 down.
20 Acres	Near Lisle, Simcoe County, sandy loam, **$320.** $50 down.
25 Acres	Same as above, **$400.** $50 down.

ALL THE ABOVE CLEARED BUT WITHOUT BUILDINGS.

10 Acres	Whitby township, one mile from station, good house, stables, orchard, fine black loam, **$1,500.** $400 cash.
10 Acres	Adjoining and similar to above, house and barn out of repair. No orchard. Fine land, **$1,250.** $250 cash.
53 Acres	Brooklyn Manor Farm, 34 miles from Toronto, 15 rooms, quarter mile from station, electric light, telephone, barns, stables, water-fall, swimming pool, orchard beautiful gardens, black loam; farm in fine order. **$10,000.** Terms easy.

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Norfolk county. Such is the place that has been attained through cooperative endeavour by a one time unknown fruit growing county.

The greatest prize of all, however, went to the fruit growers of the United Counties of Northumberland and Durham. They won the first prize of two hundred dollars and a second prize of one hundred and fif dollars in the class for one-half carload lots of apples packed in boxes. So carefully were their winning three hundred boxes of Spies packed, that each box contained one hundred apples, twenty to a layer. Their second prize lot of Baldwins were packed just as uniformly with twenty-three apples to the layer in each case. Norfolk county here had to be content with a third placing on their three hundred boxes of Baldwins.

In judging this feature, the judges used a score totalling one hundred, giving forty for packing, ten for variety, twenty for quality, and thirty for grading. On this basis the Northumberland and Durham Apple Growers' Association won first with the following points: Packing, 39½; variety, 10; quality, 17¼; grading, 30. Second prize went to the Northumberland and Durham Cooperative Fruit Growers' Association, who produced a grand lot of Baldwins with these points: Packing, 39¼; variety, 9; quality, 17; grading, 28. Third place was taken by the Norfolk county Baldwins with this score: Packing, 39; variety, 9; quality, 18; grading, 26¾. The points out of 100 secured respectively were 95¼ by Northumberland and Durham Cooperative Apple Growers' Association 93¼ by Northumberland and Durham Cooperative, and 92¼ by Norfolk.

All the stuff in these three exhibits was away above the ordinary. The fruit was superior in quality, color and size. Northumberland and Durham won out with their Spies on account of variety and uniformity in pack. The apples in this first prize exhibit were also of high quality. They won second on packing and grading.

Norfolk had a bunch of apples that could scarcely be beaten anywhere for substance and quality, but possibly lost a higher place through the fact that a train wreck interfered with the excellence in packing that the county is noted for. Every box of the six hundred shown by Northumberland and Durham had the same number of apples in each box, and every apple in the boxes was uniform in size. The success of these counties this year should be an incentive to others for next year.

SHOWING OF PEARS

There was also an excellent show of pears on plates and in packages. The varieties shown were Anjou, Bosc, Clairgeau, Duchess, Kieffer, Lawrence, and Nelis. The leading exhibitors were: W. H. Bunting, R. Thompson, F. G. Stewart, Lewis Haynes, and G. Goring, of St. Catharines; G. S. Peart, Burlington; and J. B. Guthrie, of Dixie. Most of these names were associated also with a fairly good display of grapes. From the orchards of F. G. Stewart and R. Thompson came also collections in competition, showing displays of fruit, other than apples. First was won by Thompson.

There was a very large exhibit of preserved fruits, there being about three hundred and fifty jars from individual exhibitors, and four large displays of well-made goods from Branch Women's Institutes. This display was of special interest to ladies, but it was noticed that the men lingered near them with longing.

Lambton county, like Norfolk, has found

Douglas Gardens
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On his return, Mr. Cameron will take charge of the Oakville plant, which will be devoted almost entirely to ornamentals. As Landscape Expert he is at your service, and we suggest that engagements be made with us now, which will have his attention upon his return.

Our FRUIT TREES are very fine, and we shall be glad to quote prices on your requirements.

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prominence as a fruit growing county largely through the cooperative efforts of its growers. Their exhibit, comprising three hundred and fifty-two boxes, was the most striking at the fair. A map of the county was traced with different colored apples. Brant county also had an attractive exhibit of seventy-six boxes and twelve barrels of splendidly colored fruit. Brant fruit growers tell you that you can always bank on their Spies, and the excellence of the specimens shown merits attention. Cooperative effort was also responsible for this excellent exhibit. Other excellent county exhibits of box fruit were made by Essex, Huron, and Prince Edward. Other fruit growing districts, notably Hastings county, had numerous entries of fine fruit in competitive classes.

Prominent among the winners in the barrel classes were: P. Walker, I. Howe, Fred Doan, and John Winter, all of Norfolk. In the single box classes some of the best awards went to R. B. Scripture, Brighton; Northumberland and Durham Apple Growers' Association; T. Cunningham, Norfolk; G. H. Martin & Son, Port Hope; Arcona Fruit Growers' Association; John Watson, Ontario Co., and F. G. Stewart, of Homer. Other exhibitors too numerous to mention secured high places in the box classes. In the plate classes awards were distributed over the entire fruit growing area of Ontario, but here also Norfolk county was most prominent.

BEST FLOWER SHOW YET

The florists were nowise behind the fruit men in improving their department at the fair. The flower show was the largest ever seen at the Ontario Horticultural Exhibition, and there were many outstanding exhibits. Roses were an especially strong class. Miller, of Bacondale, after being absent from the shows for some years, this year reappeared with the finest collection of roses ever exhibited at this fair. A bunch of Pink Killarneys attracted special attention. Chrysanthemums made a fine showing. Sir Henry Pellett being the most successful exhibitor. The Allan Gardens had a nice group exhibit not in competition, and the Exhibition Park, two groups. One bloom in one of the Park exhibits, florists pronounced the most perfect that they had ever seen.

The honey exhibits which have shown a tendency to fall off in recent years was this year an outstanding success. "I was at the Madison Square Gardens last winter and there were exhibits from six States in the honey section, but the whole together would not touch the Ontario exhibits," said Mr. S. D. House, a United States visitor to the Fair. "I have travelled all over the United States," he continued, "but I have never seen such an exhibit as you have here."

One of the most prominent exhibits at the fair was a large display of comb, bottled, canned, and brick honey, made by the Ontario Beekeepers' Association. This display was arranged in the form of a dome in the centre of the building. The display of the Middlesex county Beekeepers' Association nearby, lost none of its attractiveness because of its less extent.

FINE PRODUCTS OF THE GARDEN

Vegetable growers did their best to hold the pace with fruit growers in improving their department of the exhibition. Formerly the vegetable exhibits have been somewhat crowded, but this year they had lots of room, which they used to good advantage. The onion display as usual was one of the largest and best. Cauliflower, potatoes and cabbage also had good classes. Some of those who did the most to make

Ontario—The Land of Promise

Apple Orcharding in Ontario

Ontario is the Land of Promise to the enterprising settler who proposes to grow fruit. It's opportunities to him are unequalled anywhere else. It is the home of the successful and profitable orchard.

Ontario possesses the best fruit-growing areas in the great new world. Her soil and olimate insure quality in all agricultural products. Upon her wide and fertile acres general farming, fruit growing, market gardening, and the kindred business of successful vegetable production have all proved splendid commercial enterprises.

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REMARKABLE RESULTS

Ontario produces 60 per cent of all the Plums grown in Canada.
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Ontario produces 80 per cent of all the Pears grown in Canada.
Ontario produces 99 per cent of all the Peaches grown in Canada.
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There are reasons for the remarkable results achieved. Nature and mankind have joined hands. The fruit grower reaps the benefit of ideal natural conditions and exceptional modern advantages and facilities. Everything contributes to his success.

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Ontario leads in fruit growing because here the fruit finds:
A suitable soil.
An ideal climate.
Land at reasonable prices.
Unsurpassed transportation facilities.
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A sufficient rainfall with no need for irrigation
The opportunity to acquire almost any acreage required.
A reputation for excellent fruit products, which is a world-wide asset.

Government experimental stations to give the fruit grower counsel free of cost.
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Ontario offers big opportunities for industry and enterprise. The capital required is comparatively small. The return on the investment is large, immediate and sure.

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There are many soils, suited to a variety of fruits.
Apples do well on clay loam or gravelly or sandy soil.
Peaches thrive on sandy loam.
Grapes and Pears prefer a clay soil.
Plums grow on a variety of soils, but prefer the heavier types.
Cherries find their ideal conditions in a light, sharp gravel, well drained.
Strawberries and Raspberries thrive on a rich, sandy loam.

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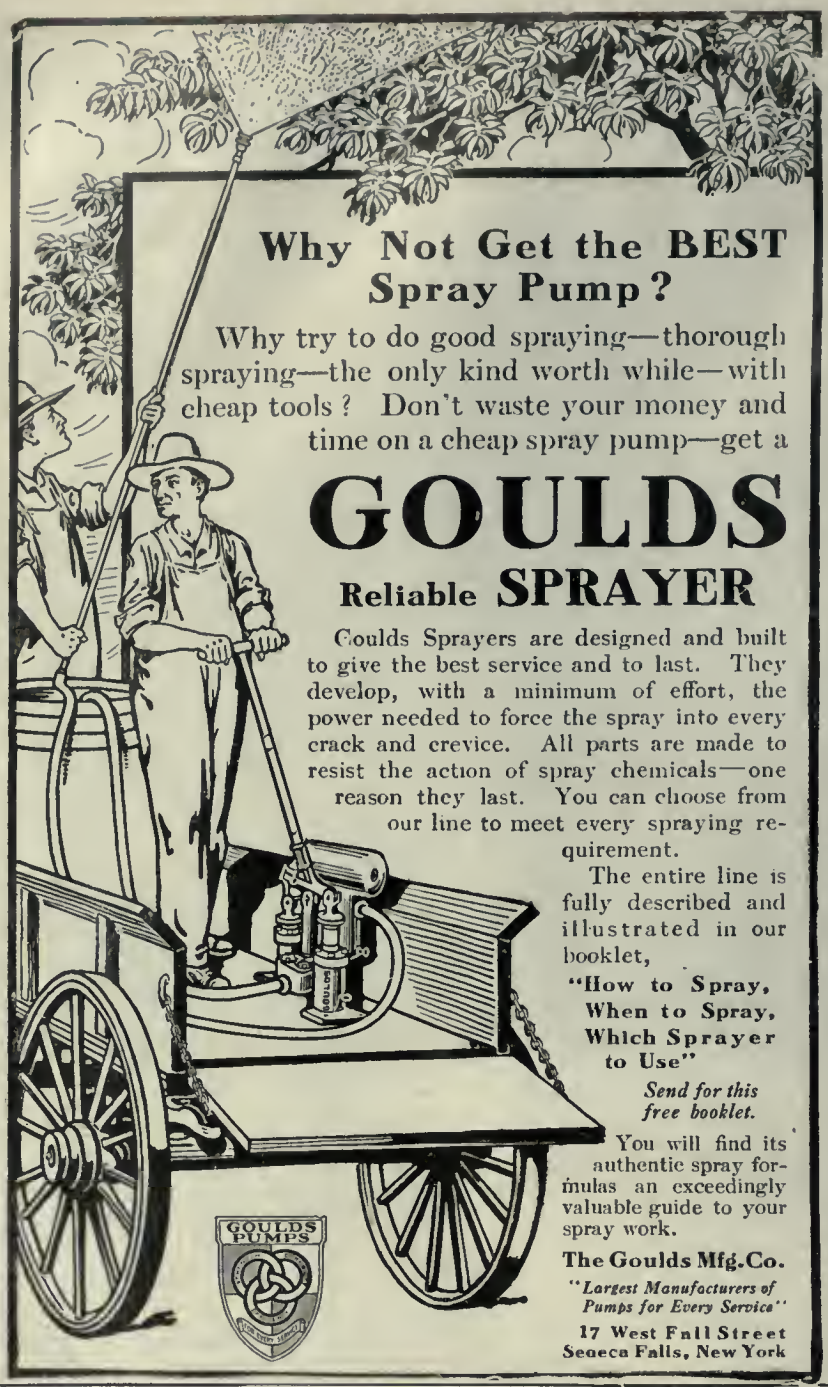

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International Stock Food conquered England, just as it conquered Canada and the United States, by proving to the Dairy Experts that it is the greatest milk producer and health restorer in the world.

The test was made on three cows from the dairy herd of S. W. Hackney, Esq., Leeds, England, Chairman of the Yorkshire Federation of Dairy Farmers.

Quantity and quality of milk was tested for a certain time—then **"International Stock Food"** was added to the regular feed.

INTERNATIONAL STOCK FOOD showed an Increase in Milk of 14.2 pints daily, and 1.21 pounds of butter daily.

This proves that **International Stock Food**, added to the regular feed will increase the quantity and improve the quality of milk from every cow.

It shows that **International Stock Food** aids digestion and keep cows in better condition. It proves that **International Stock Food** is a money-maker for the farmer—that every farmer who owns one, or a hundred, cows should feed **International Stock Food** every day.

Make the test yourself—weigh the milk you are getting now—then feed **International** for a few weeks, and weigh again. Then you'll see how **International Stock Food** will make money for you.

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this exhibit a success were Brown Bros., W. Harris, F. F. Reeves, and J. Dandridge of Humber Bay; C. Plunkett, Woodbridge, and C. McKay, Toronto.

Prof. S. B. McCready, who directs agricultural education in rural Ontario schools, had an exhibit that showed what he considered a model country school. The small model of a school house was surrounded by grounds of ample proportions, laid out for games, garden plots for each student, and a playground equipped with swings and other devices that children delight in. It is safe to say that the average child's aversion to school would be less were more rural schools equipped as was this model. Professor McCready himself was on hand to explain the exhibit.

SOME THINGS FRUIT GROWERS BUY

Commercial firms occupied one wing of the Horticultural Building. Among the firms exhibiting were the Niagara Spray Co., Brown Bros., the Auburn and Helderleigh Nurseries, the Harris Abbatoir, William Davies and German Potash Syndicate fertilizer concerns, Goold's, with their sprayers, and Carter's seeds.

The Ontario Horticultural Exhibition of 1912 had in it much of promise of still greater and better things to come. It inspired all who saw it by the visions to which it gave birth of Ontario becoming recognized in the near future as one of the great fruit districts of the world.

Ontario Fruit Growers' Convention

The big questions of transportation, fruit inspection, and good marketing were placed first and foremost at the Fifty-second Annual Convention of the Ontario Fruit Growers' Association, held in Toronto, November 12 to 16. In days of old educational lectures dealing with the problems of production received most attention at this convention, but times have changed. The increasing number of small fruit growers' associations throughout the province, numerous educational bulletins, and the growing efficacy of the agricultural press, have made it unnecessary for the central organization to devote as much of its energies as formerly to increasing production. The problems of marketing, including the regulation of freight and express rates, are questions that now demand attention by the provincial organization.

The old question of over-production received attention in the Presidential address of Mr. D. Johnson, Forest, Ont. Mr. Johnson advised growers to plant those varieties that command a ready sale. He himself has found that Spies, Snows, McIntosh Reds, and Kings are in great demand at prices ranging from three dollars fifty cents to four dollars a barrel at shipping points. In such varieties as Ben Davis, Baldwins, and Greenings, there is over-production even now, and these varieties are moving slowly at two dollars twenty-five cents a barrel. Mr. Johnson noted the growing preference of Western dealers for fruit grown in the United States and British Columbia. He said that the superior flavor of our Ontario fruit is admitted, but that dishonest and careless packing is losing us the Western market. Another point strongly emphasized was the absolute necessity of cooperation among the growers in marketing. "The crying need of the day is an educational campaign on how to market fruit," concluded Mr. Johnson.

"Transportation Problems" were discussed by G. E. McIntosh, of Forest, a member

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Big Ben

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Then think of Big Ben for those boys and girls.—Toys, of course, should never be displaced. It wouldn't be Christmas without them, but mix in *useful* things—things that develop *pride* and make little people feel responsible. Give them presents to *live up to* and to *live up with*. Don't make the mistake of thinking they don't feel the *compliment*.—Let one of the first things that greets your little boy and girl Christmas morning be that triple nickle-plated, handsome, pleasant-looking, serviceable and inspiring clock-alarm—BIG BEN.

Just watch if they don't say, "Isn't that a crackerjack! Why! is that for me to use myself?"—Then see how proudly they carry Big Ben upstairs "*to see how he looks in my room.*" Just put yourself in that boy's or girl's place.

Big Ben *is a crackerjack-of-a Christmas-present* to give to anyone. The fact is, he is two presents in one, a dandy alarm to *wake up with*, a dandy clock to tell time *all day* by. And he's as good to look at as he's pleasing to hear.

He stands *seven inches* tall, slender, handsome, massive, with a big, frank, honest face and big, strong, clean-cut hands you can see at a glance in the *dim morning light* without even having to get out of bed.

He's got an inner vest of steel that insures him for life; large comfy keys that almost wind themselves, and a deep, jolly ring that calls just when you want and either way you want, *five straight minutes* or *every other half minute for ten minutes*, unless you flag him off.

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THE CANADIAN HORTICULTURIST
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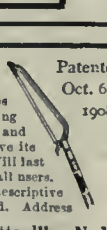

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Representative for Ontario,
Jas. E. Johnson & Bro., Simcoe, Ont.

of the joint committee of the Fruit Growers' and Apple Shippers' Associations, appointed to investigate shipping conditions and suggest ways of improvement. Mr. McIntosh dealt with the problem in a broader way than it has ever been handled before at the Fruit Growers' Convention. Petty charges of pilfering from packages received little attention from this speaker. Instead, he made a sweeping indictment of overcharging and inefficiency in transportation on the part of our railway companies, as a result of which Canadian producers are being driven off their own Canadian markets. Mr. McIntosh took the market at Sault Ste. Marie as an example. The rate of fruit from Lyons, N.Y., to the "Soo" was found to be forty-two cents a cwt., while Western Ontario growers are charged fifty cents a cwt. As a result of these discriminations, United States fruit growers have almost monopolized this Canadian market.

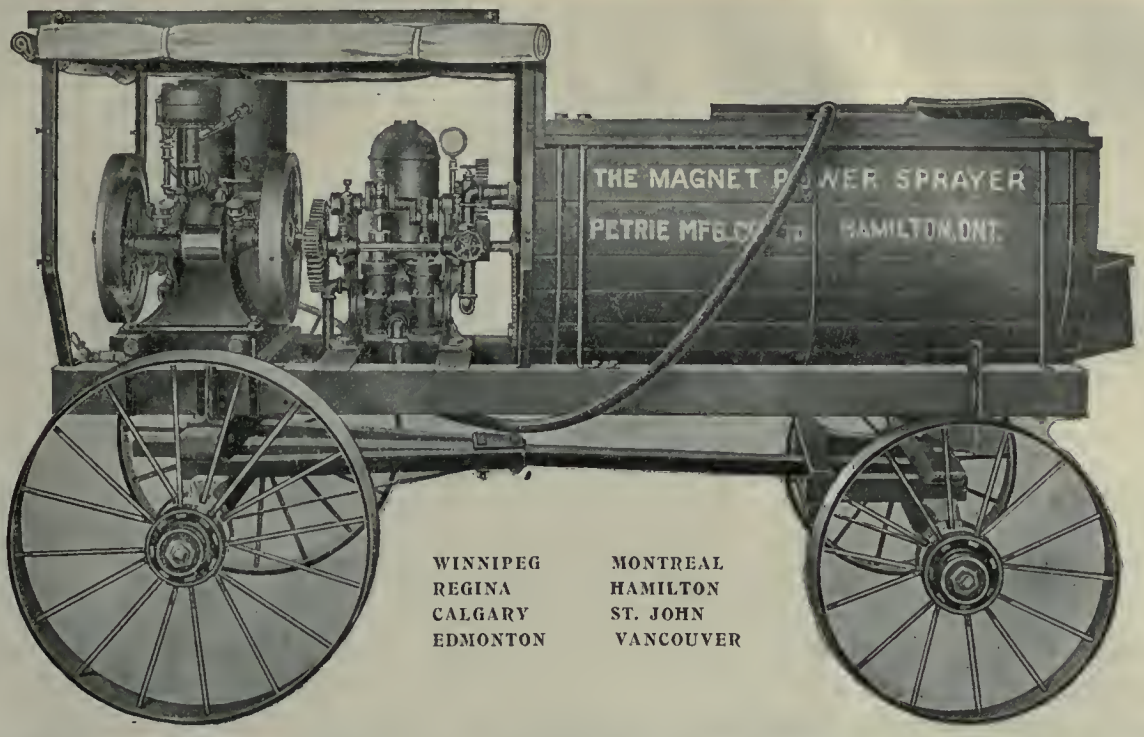
An investigation into freight rates on American and Canadian lines brought out the following: Rate from Minneapolis to to Sault Ste. Marie, four hundred and ninety miles, thirty cents; Forest, Ont., to Sault Ste. Marie, three hundred and twenty-five miles, fifty-four cents; Chicago to Sault Ste. Marie, three hundred and forty-seven miles, onions and vegetables, six hundred and seventy-four miles, twenty-two cents; Forest to Sault Ste. Marie, three hundred and forty-seven miles less, twenty-six cents. Rates east of Winnipeg are not as satisfactory as they might be, but West they are altogether exorbitant. A carload of apples can be sent from St. Catharines to Winnipeg, one thousand two hundred and thirty-four miles, for one hundred and twenty-seven dollars twenty cents. To send the same carload four hundred and eighty-nine miles further to Saskatoon would cost ninety-one dollars twenty cents additional. Is it any wonder that Ontario growers are losing the western market?

FRUIT TO GARGARY AT THREE MILES AN HOUR

Mr. McIntosh recommended that measures be taken to force the railway companies to carry fruit at a rate of at least ten miles an hour. One shipment of apples to Calgary which had been traced did not average three miles an hour. Another to Regina averaged six miles an hour, and the average of fourteen carloads to Winnipeg was hardly seven miles an hour. Losses sustained by individual growers from these delays had amounted in some cases to over three hundred dollars. The Railway Commission cannot deal with this question until evidence is submitted that will prove the entire system defective. Mr. McIntosh suggested that it would be only just that when a grower had to wait for more than three days for a car, that the railway company bear the loss sustained. A significant feature noted by the speaker was that car shortage was most noticeable at non-competitive points.

A NEEDED PRIVILEGE

A further reform urged by the committee that Mr. McIntosh represented, was that growers be allowed to complete cars in transit as is permitted with almost all other lines of goods. This is a reform that would be of particular benefit in districts where fruit is not a specialty and where it is difficult to secure an entire carload at one point and at one time. The inefficiency of the railway service is well illustrated by their failure to provide refrigerator cars in sufficient numbers to accommodate increasing traffic. Mr. McIntosh cited one railway company that has ten refrigerator cars less than it had four years ago and in the meantime the tonnage carried has greatly



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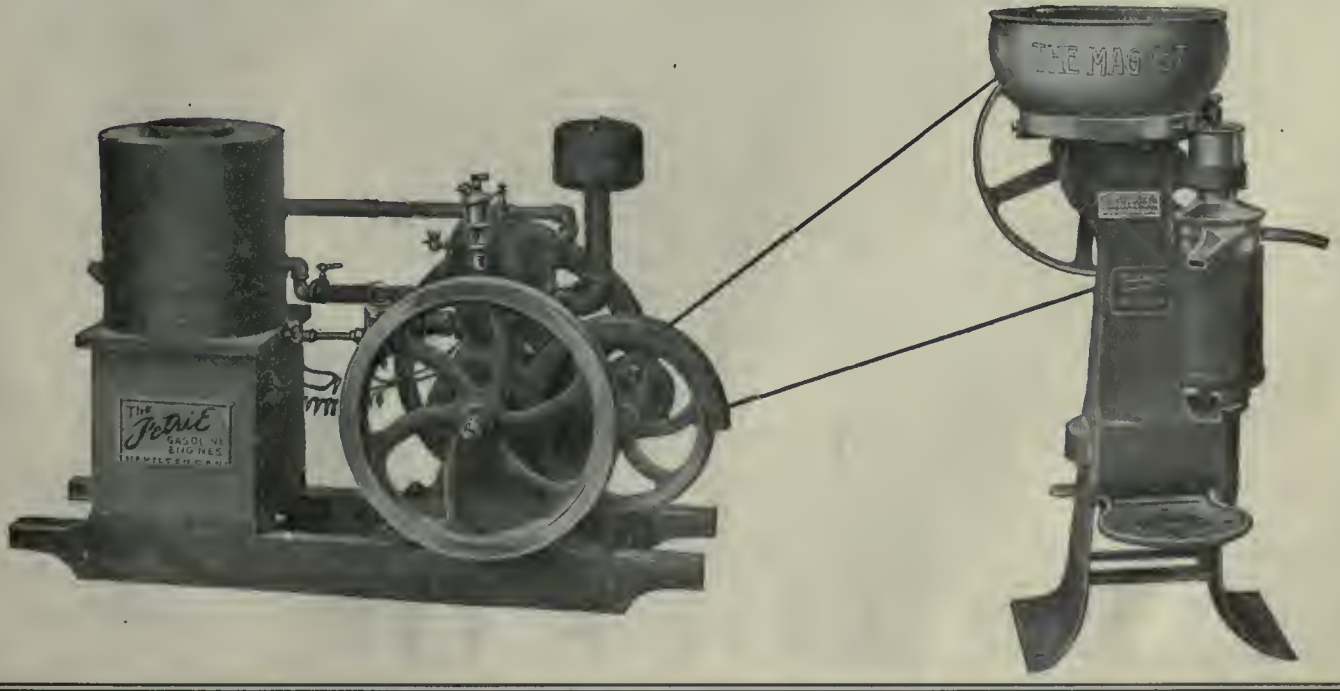

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increased. An increase in the powers of the Railway Commission in order that they may settle the vexed question of claims, which must now be settled by costly court procedure, was another important recommendation by this speaker.

SAN JOSE SCALE IN NOVA SCOTIA

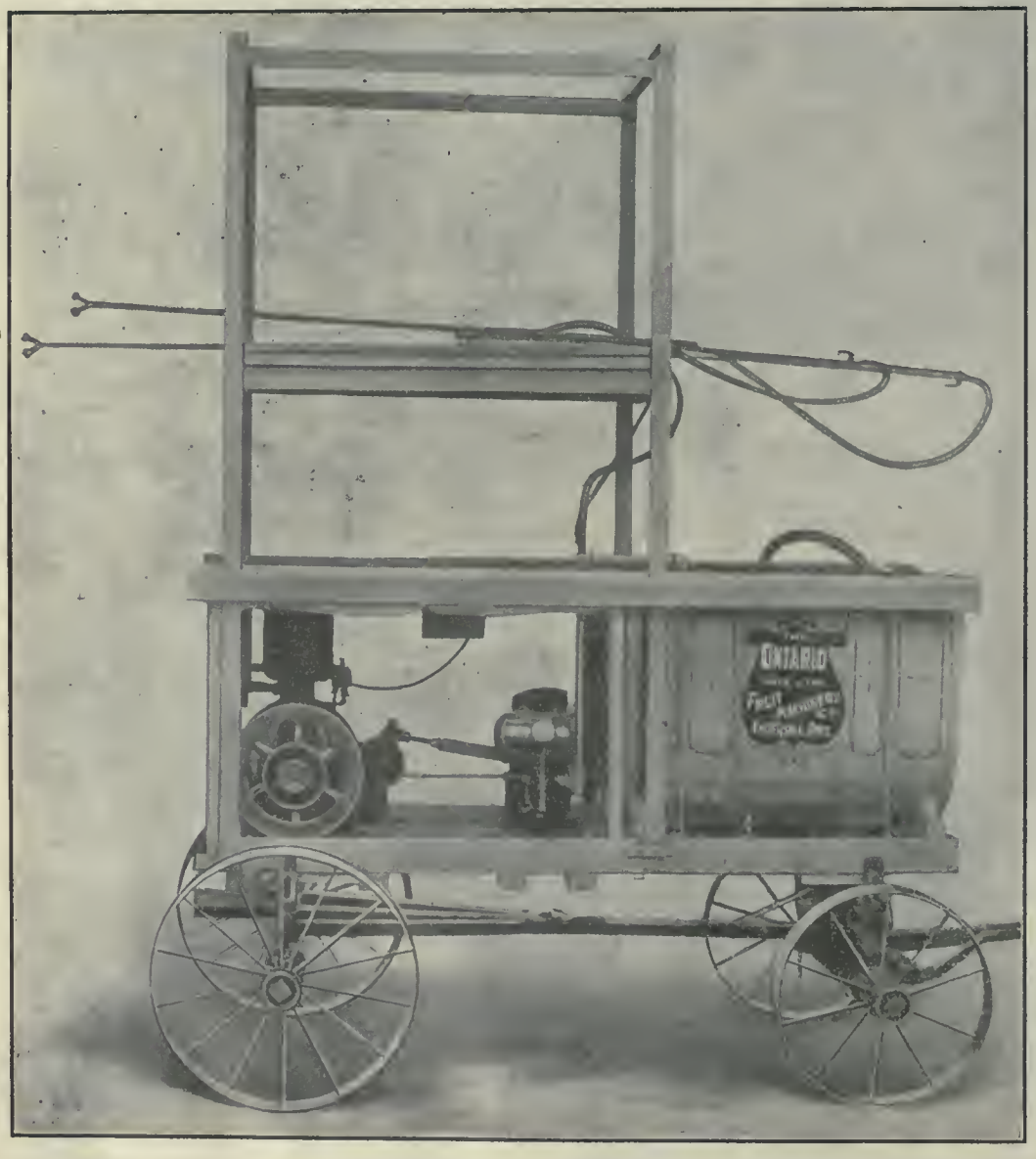
Dr. G. Gordon Hewitt, Dominion Entomologist, traced the recent outbreak of San Jose Scale in Nova Scotia to Ontario nursery stock. Living scale was found on one hundred and twenty-seven properties on the 1912 stock alone. In every case the stock had been purchased from Ontario nurserymen. Stock imported from United States and fumigated by the Dominion authorities was all free from the disease. As a result of the outbreak the provincial government of that province has passed an order that all imported stock be accompanied by a certificate of inspection and that stock imported from any other part of Canada must be fumigated after it reached Nova Scotia at two points named.

Mr. Morris, representing the nurserymen, asked if the Dominion Government could not prevail upon the Nova Scotia people to accept fumigation by Dominion officials at Ontario nurseries, thus doing away with the necessity of a second fumigation in Nova Scotia. He also pointed out that of one hundred and fifty-seven thousand trees shipped to Nova Scotia only six hundred and ninety-three had been infested. Mr. P. W. Hodgetts intimated that a result of the Nova Scotia disclosures would be a closer supervision of the nursery stock sold in Ontario.

The Thursday morning session was conducted in the Horticultural Building at the Fair. Mr. P. J. Carey, Dominion Fruit Instructor, defined a number one apple and by means of specimens told the growers how to select the different grades. Prof. J. W. Crow gave an address on "What Fruit Shall the Ontario Shipper Put Into Boxes?" As the market is at present this package is only adaptable to number one fruit, and that of the best varieties. If lower grades are boxed the reputation of the box as a container of first-class apples suffers. He recommended Kings, Spies, Spitzenburgs, Snows, and McIntosh for box packing.

SPLENDID RETURNS FROM FERTILIZER

"-Fertilizers for the Orchard" was dealt with authoritatively by J. P. Stewart, Experimental Pomologist, at the Pennsylvania State College. His deductions were based on six years of work in ten experiments located in the leading apple sections of Pennsylvania and involving ten different



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types of soil and two thousand two hundred and nineteen trees. The trees ranged from ten to forty years of age and have produced one million seven hundred thousand barrels of fruit since the work started. In this work Dr. Stewart has secured as high as one thousand seven hundred per cent. of an increase through fertilization and net profits as great as four hundred and twenty dollars an acre in a single season. In the absence of nitrogen, phosphate and potash have not been profitable; nitrogen has a greater influence in increasing yield than any other element; the best growing plots have been the best fruit plots; in some orchards some fertilizers give good results, there are no results whatever in others; the only way to know definitely how to fertilize an orchard is to conduct small plot experiments in each orchard.

TROUBLES OF THE GROWER

The new Provincial Entomologist, L. Caesar, B.S.A., of Guelph, dealt with "Common Insect Pests and Fungus Diseases." As a remedy for the Oyster Shell Bark Louse, Mr. Caesar advised the scraping of the trunks and efficient pruning of the top to ensure thorough spraying in the spring. Lime-sulphur (1-7) was recommended as a spray mixture, this spray, of course, to be applied when the tree is dormant. The apple aphid, Mr. Caesar described as one of the worst pests in the orchard due to its enormous powers of reproduction. Natural enemies usually hold them in check, but in cold, wet seasons they thrive. The speaker had found that the addition of one half a pound of "Aqua Forty" to a barrel of lime-sulphur spray mixture had proved efficient. It should be applied as soon as the aphids are discovered as once they get started reproducing it is difficult to check them.

The Plum Circulio and other pests may be got rid of by clearing away rubbish, cultivating moderately deep and spraying as for Codling Moth. With cherries and plums spray as the fruit is setting. In fighting the Codling Moth, Mr. Caesar laid special emphasis on the time of spraying, which is just after the petals have fallen and before the calyx has closed. The addition of two pounds of arsenate of lead to the lime-sulphur mixture (1-40) has been found efficient.

Apple Scab, which has been especially serious this season, starts to develop just as the blossoms open and makes rapid growth until the fruit is well set. After that the growth is slow. The second spraying with lime-sulphur just before the blossoms burst is the effective application. Another spraying should be given just after the blossoms fall. To be effective these sprayings must be very thorough. This last year, there was a second attack of apple scab in August. An application of lime-sulphur about August 15th was found to check the disease.

Black Rot Canker, the disease that causes dead areas on large branches, is usually due to planting varieties too tender for the climate, and it may generally be prevented by selecting hardy varieties. If the orchard is already established, Mr. Caesar recommended cleaning the bark off the dead areas, washing with lime sulphur or bluestone and then painting with white lead. On the smaller branches bark on dead areas might be removed with a hoe and covered with coal tar. Careful spraying and cultivation also tend to check the disease.

Inky Spot, another disease serious this season, may be checked by spraying with lime-sulphur the first of August. A spruce

(*Continued on page x.*)

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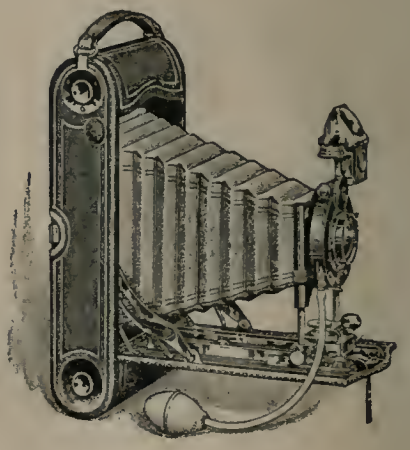

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